ORDER NO. DAD84020066C9

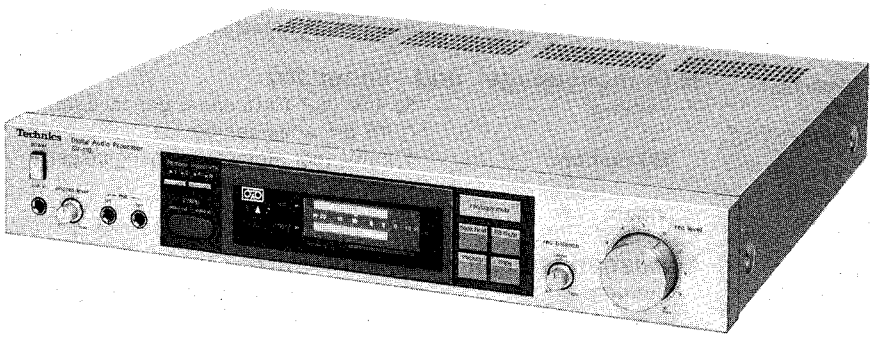
Service Manual

DIGITAL

Digital Audio Processor

SV-110/(K)

[E], [EK], [EG], [EB], [EH], [EF], [Ei], [XA], [PC]



***The colors of this model include silver and black.**
***The black type model is provided with (K) in the Service Manual.** SV-110 (K)

Notes:
*Sets for [PC] area are of NTSC format.
*Set for [XA] area are available in NTSC format and PAL/SECAM format.
*Sets for other areas are of PAL/SECAM format.

Areas

* [E] is available in Switzerland and Scandinavia.
* [EK] is available in United Kingdom.
* [EG] is available in F.R. Germany.
* [EB] is available in Belgium.
* [EH] is available in Holland.
* [EF] is available in France.
* [Ei] is available in Italy.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [PC] is available in European Audio Club.

English

Specifications

Specifications are subject to change without notice for further improvement.
Weight and dimensions shown are approximate.

■ General

Power supply: ~110/120/220/240 V, 50/60 Hz
Power consumption: 40 W
Dimensions: 43 W×37.5 D×7.6 H cm (16 15/16"×14 3/4"×3")
Weight: 6.1 kg (13.7 lb.)

■ System type

Type: Digital audio processor
PCM standard: Consumer PCM encoder/decoder standards file STC-008 (for PAL/SECAM format), STC-007 (for NTSC format) of the EIAJ stereo technical committe, video technical committee.
Quantization: 14-bit linear.
Coding: 14-bit linear
Number of audio channels: 2 (L, R stereo)
Frequency response: 2 Hz~20 kHz (±0.5 dB)
Total harmonic distortion: 0.01% or less (1 kHz, 0 dB)
Dynamic range: 86 dB or more
Wow & flutter: unmeasurable (Below measurement threshold)

■ Input level and impedance

Line: 55 mV [at reference input level (−15 dB indication)]/50 kΩ
Microphone: 1.1 mV [(at reference input level (−15 dB indication)]/600Ω
Video: 1 Vp-p/75Ω

■ Output level and impedance

Line: 310 mV [at reference output level (−15 dB indication)]/220Ω
Video: 1 Vp-p/75Ω
Monitor: 1 Vp-p/75Ω

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

Panasonic Tokyo
Matsushita Electric Industrial Co., Ltd.
1-2, 1-chome, Shibakoen, Minato-ku, Tokyo 105 Japan

Deutsch

TECHNISCHE DATEN

Änderungen der technischen Daten vorbehalten.
Die angegebenen Gewichts- und Abmessungsdaten sind ungeähre Werte.

■ Allgemeines

Stromversorgung: ~110/120/220/240 V, 50/60 Hz
Stromverbrauch: 40 W
Abmessungen: 43 (B)×37,5 (T)×7,6 (H) cm
Gewicht: 6,1 kg

■ Systemtyp

Typ: Digital Audio Prozessor
PCM-Norm: Verbraucher-PCM-Ver-/Entschlüßler-Norm STC-008 (für PAL/SECAM-Format) STC-007 (für NTSC-Format) vom EIAJ stereotechnischen Ausschuß, videotechnischen Ausschuß. (Mit Aufnahmevorbetonung)
Quantisierung: 14 Bit, linear
Schlüsselung: 14 Bit, linear
Anzahl der Audiokanäle: 2 (L, R-Stereo)
Frequenzgang: 2 Hz–20 kHz (±0,5 dB)
Totale Klirrverzerrung: 0,01% oder weniger (1 kHz, 0 dB)
Dynamikbereich: 86 dB oder mehr
Gleichlaufschwankungen: Ausserhalb Messbarkeit

■ Eingangspegel und -impedanz

Leitung: 55 mV [bei Referenzeingangspegel (−15 dB Anzeige)]/50 kΩ
Mikrophon: 1,1 mV [bei Referenzeingangspegel (−15 dB Anzeige)]/600Ω
Video: 1 Vp-p/75Ω

■ Ausgangspegel und -impedanz

Leitung: 310 mV [bei Referenzausgangspegel (−15 dB Anzeige)]/220 Ω
Video: 1 Vp-p/75Ω
Monitor: 1 Vp-p/75Ω

Français

CARACTERISTIQUES

Les spécifications sont susceptibles d'être modifiées sans préavis.
Le poids et les dimensions donnés sont approximatifs.

■ Généralités

Alimentation: −110/120/220/240 V, 50/60 Hz
Consommation: 40 W
Dimensions: 43 (L)×37,5 (P)×7,6 (H) cm
Poids: 6,1 kg

■ Type du système

Type: Processeur audio-numérique
Norme de la modulation par impulsions codées (PCM): En conformité avec les notations normalisées STC-008 (pour caractéristique PAL/SECAM), STC-007 (pour caractéristique NTSC) d'encodage/décodage de modulation par impulsions codées du Comité Technique Vidéo et du Comité Technique Stéréo EIAJ.
Quantification: 14 bits linéaires
Codage: 14 bits linéaires
Nombre de canaux audio: 2 (gauche et droite stéréophoniques)
Réponse en fréquence: 2 Hz–20 kHz (±0,5 dB)
Distorsion harmonique totale: 0,01% ou moins (1 kHz, 0 dB)
Plage dynamique: 86 dB ou plus
Scintillation et pleurage: Non mesurable (Au-dessous du seuil de mesurage)

■ Niveau d'entrée et impédance

Ligne: 55 mV [à un niveau d'entrée de référence (indication de −15 dB)]/50 kΩ.
Microphone: 1,1 mV [à un niveau d'entrée de référence (indication de −15 dB)]/600 Ω.
Vidéo: 1 V crête-à-crête/75Ω

■ Niveau de sortie et impédance

Ligne: 310 mV [à un niveau de sortie de référence (indication de −15 dB)]/220 Ω
Vidéo: 1 V crête-à-crête/75Ω
Moniteur: 1 V crête-à-crête/75Ω

Español

ESPECIFICACIONES

Las especificaciones quedan sujetas a cambios sin aviso previo.
Los pesos y las dimensiones indicados son aproximativos.

■ En general

Suministro de corriente:	–110/120/220/240 V, 50/60 Hz
Consumo de corriente:	40 W
Dimensiones:	43 (ancho)×37,5 (prof.)×7,6(alto) cm
Peso:	6,1 kg

■ Tipo de sistema

Tipo:	Procesador digital de audio
Normas para PCM:	En conformidad con el archivo STC-008 (para el sistema PAL/SECAM), STC-007 (para el sistema NTSC) de las normas para codificadores/descodificadores PCM para consumidores de los comités técnicos de estéreo y de vídeo EIAJ
Cuantificación:	lineal de 14 bitios
Codificación:	lineal de 14 bitios
Número de canales de audio:	2 (estéreos, derecho e izquierdo)
Respuesta de frecuencia:	2 Hz–20 kHz (±0,5 dB)
Distorsión armónica total:	0,01% o menos (1 kHz, 0 dB)
Gama dinámica:	86 dB o más
Ululaciones y trémolo:	Inmedibles (Inferior al umbral de medición)

■ Nivel e impedancia de entrada

Línea:	55 mV [en el nivel de entrada de referencia (marcando –15 dB)]/50 kΩ
Micrófono:	1,1 mV [en el nivel de entrada de referencia (marcando –15 dB)]/600Ω
Vídeo:	1 Vp-p/75Ω

■ Nivel e impedancia de salida

Línea:	310 mV [en el nivel de salida de referencia (marcando –15 dB)]/220Ω
Vídeo:	1 Vp-p/75Ω
Monitor	1 Vp-p/75Ω

■ MEASUREMENTS AND ADJUSTMENTS — English

• Adjustment of display circuit

After repair of display circuit, make the adjustment as follows:

• Instruments used and setting

1. AC electronic voltmeter
2. 100 Hz sine-wave oscillator
3. Recording level . . . . . .max.
4. Recording balance . . . . . .center
5. Playback mode switch 1
6. Connect 100 Hz sine-wave oscillator and AC electronic voltmeter to LINE IN.
7. Adjust the oscillator so that the input of LINE IN is 319 mV.

Step	Item	Parts adjusted	ADjusting procedure
1	0 dB	VR213 **(Fig. 8)**	• Adjust VR213 so that 0 dB (B16) of level meter on the right begins to light up. **(Fig. 9)**
2	Balance	VR211 **(Fig. 8)**	• Adjust VR211 so that 0 dB (B16) of level meter on the left begins to light up. **(Fig. 9)**
3	Recovery time	VR212 **(Fig. 8)**	• Instantaneously cut off the input of LINE IN and check the falls of right and left channels of level meter. • If there is a difference between right and left channels, adjust VR212 until no difference.

■ MESSUNGEN UND JUSTIERUNGEN — Deutsch

• Justierung der Anzeigenschaltung

Nach der Reparatur der Anzeigenschaltung ist die folgende Justierung durchzuführen:

• Zu verwendende Instrumente und Einstellungen am Gerät

1. Elektronisches Wechselstrom-Voltmeter
2. 100 Hz-Sinuswellen-Oszillator
3. Aufnahmepegel. . . . . .Max.
4. Aufnahmebalance . . . . . .Mitte
5. Wiedergabebetriebsart-Wahlschalter. 1
6. Den 100 Hz-Sinuswellen-Oszillator und das elektronische Wechselstrom-Voltmeter an den LINE IN-Anschluß anschließen.
7. Den Oszillator so einstellen, daß die Eingangsleistung am LINE IN-Anschluß 319mV beträgt.

Schritt	Abgleich	Zu justierende Teile	Justierung
1	0 dB	VR213 **(Abb. 8)**	• VR213 so justieren, daß 0 dB (B16) des Pegelmeters rechts gerade aufleuchtet. **(Abb. 9)**
2	Balance	VR211 **(Abb. 8)**	• VR211 so justieren, daß 0 dB (B16) des Pegelmeters links gerade aufleuchtet. **(Abb. 9)**
3	Rückkehrzeit	VR212 **(Abb. 8)**	• Die Eingangsleistung an LINE IN plötzlich ausschalten und das Abfallen des linken und rechten Kanals des Pegelmeters überprüfen. • Falls zwischen dem rechten und linken Kanal ein Unterschied besteht, diesen Unterschied durch Justieren von VR212 eliminieren.

CHANGES

■ REPLACEMENT PARTS LIST

Notes:

1. Mentioned in this parts list are only those changed in Model No. SV-110 for destination [M] area.
2. Important safety notice:
   Compornents identified by ⚠ mark have special characterstics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. NTSC stands for parts for NTSC format.
4. PAL stands for parts for PAL/SECAM format.
5. Parts without NTSC and PAL are common to both NTSC and PAL/SECAM format.
6. Ⓚ -marked parts are used for black only, while ○-marked parts are for silver type only. Black type model No. SV-110 (K)
7. Parts other than Ⓚ-and ○-marked are used for both black and silver types.
8. This replacement parts list contains the main parts changed from those of [M] area. For the detailed replacement parts list, refer to page 13, 14.
9. For resistors and capacitors, refer to the resistors and capacitors list on page 11, 12.

Areas

* [E] is available in Switzerland and Scandinavia.
* [EK] is available in United Kingdom.
* [EG] is available in F.R. Germany.
* [EB] is available in Belgium.
* [EH] is available in Holland.
* [EF] is available in France.
* [Ei] is available in Italy.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America. ([NXA] stands for NTSC format set for [XA] area.)
* [PC] is available in European Audio Club.

Ref. No.	Change of Part No. SV-110 [M] → SV-110		Part Name & Description	Per Set (Pcs.)	Remarks
INTEGRATED CIRCUITS					
IC481	Addition	DN74LS174 or SVIHD74LS174	D Flip Flop	1	PAL
IC482	Addition	DN74LS174 or SVIHD74LS174	D Flip Flop	1	PAL
IC483	Addition	DN74LS174 or SVIHD74LS174	D Flip Flop	1	PAL
IC485	Addition	DN74LS125A or SVIHD74LS125	Buffer Gate	1	PAL
IC486	Addition	DN74LS123	Multivibrator	1	PAL
IC487	Addition	SVITC5081AP	Phase Comparator	1	PAL
IC488	Addition	SVISN74LS628	Voltage Control OSC.	1	PAL
DIODE					
D632	LN329GP	LN329YP	PB Mute Indicator	1	
OSCILLATOR					
X401	SVQ43U1586	SVQ43U1586 [PC, NXA]	Crystal 15.86 MHz	1	NTSC
		SVQ18C1575	Crystal, 15.75 MHz	1	PAL
TRANSFORMER					
T1	SLTF6244	SLTF6642	Power Source	1	⚠
VARIABLE CAPACITOR					
TC485	Addition	ECVIZW50X32E	PLL Lock Adj.	1	PAL
SWITCHES					
S1	ESB8213V	SFDSSDS3P	Power Switch	1	⚠
S2	Addition	ESE37200	Voltage Selector	1	⚠
FUSES					
F120	XBA1F10NU14	XBA2C10TR0	T1A, 250V	1	⚠
F121	Addition	XBA2C03TR0	T300mA, 250V	1	⚠

Ref. No.	Change of Part No. SV-110 [M] → SV-110		Part Name & Description	Per Set (Pcs.)	Remarks
RESISTORS					
R481	Addition	ERDS2TJ563	Carbon, 1/4W, 56kΩ	1	PAL
R483	Addition	ERDS2TJ561	Carbon, 1/4W, 560Ω	1	PAL
R485	Addition	ERDS2TJ103	Carbon, 1/4W, 10kΩ	1	PAL
R486	Addition	ERDS2TJ103	Carbon, 1/4W, 10kΩ	1	PAL
CAPACITORS					
C1	ECKDMY103PF	ECKDKC103PF	Ceramic, 400V, 0.01μF	1	⚠
C2	Addition	ECKDKC103PF	Ceramic, 400V, 0.01μF,	1	⚠
C120	ECKDAL102Z—T	ECKDHS222MD	Ceramic, 400V, 0.0022μF	1	⚠
C121	Addition	ECKDHS222MD	Ceramic, 400V, 0.0022μF	1	⚠
C122	ECKDAL102Z—T	ECKDHS222MD	Ceramic, 400V, 0.0022μF	1	⚠
C123	Addition	ECKDHS222MD	Ceramic, 400V, 0.0022μF	1	⚠
C124	ECKDMY103PF	ECKDKC103PF	Ceramic, 400V, 0.01μF	1	⚠
C407	ECCD1H470K	ECCD1H470K [PC, NXA]	Ceramic, 50V, 47pF	1	NTSC
		ECCD1H100KC	Ceramic, 50V, 10pF	1	PAL
C408	ECCD1H470K	ECCD1H470K [PC, NXA]	Ceramic, 50V, 47pF	1	NTSC
		ECCD1H100KC	Ceramic, 50V, 10pF	1	PAL
C481	Addition	ECQM1H103JZ	Polyester, 50V, 0.01μF	1	PAL
C485	Addition	ECEA1CS100S	Electrolytic, 16V, 10μF	1	PAL
C486	Addition	ECEA1HU010	Electrolytic, 50V, 1μF	1	PAL
C487	Addition	ECCD1H121JZ	Ceramic, 50V, 120pF	1	PAL
C490	Addition	ECEA0JU470	Electrolytic, 6.3V, 47μF	1	PAL
C491	Addition	ECKD1H103MD	Ceramic, 50V, 0.01μF	1	PAL
C492	Addition	ECKD1H103MD	Ceramic, 50V, 0.01μF	1	PAL
CABINET and CHASSIS PARTS					
1	SSBP110N01E	SSBP110N01E	Front Panel (Silver)	1	○
		SSBP110N11E	Front Panel (Black)	1	Ⓚ
13	SSUM110N01E	SSUM110N01E	Sub Panel (Silver)	1	○
		SSUM110N11E	Sub Panel (Black)	1	Ⓚ
14	SSUP110N03	SSUP110N03	Cabinet (Silver)	1	○
		SSUP110N13	Cabinet (Black)	1	Ⓚ
26	SFDJHSC0491	SFDJHSC0491 [XA, PC]	Jack, AC IN	1	⚠
		SFDJHSC0516 [Other areas]	Jack, AC IN	1	⚠
27	SRNZ010M03	Deletion	----------	1	
28	SSNN110M01	SSNN110S01 [E]	Name Plate	1	
		SSNN110P02 [PC]	Name Plate	1	
		SSNN110X01 [XA]	Name Plate	1	
		SSNN110G01 [EK]	Name Plate	1	
		SSNN110R01 [Other areas]	Name Plate	1	
34	SJT345	SJT347	Holder, Fuse	4	
37	SSGK110N01	SSGK110N01	Cap (Silver)	1	○
		SSGK110N11	Cap (Black)	1	Ⓚ
40	Addition	SUV453	Cover Voltage Selector	1	
SCREW					
N4	XTB4+8BFN	XTB4+8BFN	Screw, Cabinet (Silver)	4	○
		XTB4+8BFZ	Screw, Cabinet (Black)	4	Ⓚ

■ MESURAGES ET RÉGLAGES — Français

• Réglages du circuit de l'affichage

Après avoir réparé le circuit de l'affichage, effectuer le réglage de la manière suivante:

• Appareils utilisés et mises au point

1. Voltmètre électronique à C.A.
2. Oscillateur à ondes sinusoïdales de 100 Hz
3. Niveau d'enregistrement. . . . . max.
4. Equilibrage de l'enregistrement. . . . . centre
5. Commutateur de mode de lecture. . . 1
6. Raccorder l'oscillateur à ondes sinusoïdales de 100 Hz et le voltmètre électronique à C.A. à "LINE IN" (entrée de ligne).
7. Régler l'oscillateur de telle sorte que l'ENTREE DE LIGNE soit de 319 mV.

Etape	Article	Elément à régler	Mode de réglage
1	0 dB	VR213 **(Fig. 8)**	• Régler VR213 de telle sorte que 0 dB (B16) de l'indicateur de niveau sur la droite commence à s'éclairer. **(Fig. 9)**
2	Equilibrage	VR211 **(Fig. 8)**	• Régler VR211 de telle sorte que 0 dB (B16) de l'indicateur de niveau sur la gauche commence à s'éclairer. **(Fig. 9)**
3	Durée de rétablissement	VR212 **(Fig. 8)**	• Couper instantanément l'entrée de "LINE IN" (entrée de ligne) et vérifier les chutes de tension des canaux de droite et de gauche de l'indicateur de niveau. • S'il y a une différence entre les canaux de droite et de gauche, régler VR212 jusqu'à ce que cette différence disparaisse.

■ MEDICIONES Y AJUSTE — Español

• Circuito de presentación

Después de la reparación del circuito de presentación, haga el ajuste como sigue:

• Instrumentos usados y puesta

1. Voltímetro electrónico de CA
2. Oscilador de onda sinusoidal
3. Nivel de grabación . . . . . máx.
4. Equilibrio de grabación . . . . . centro
5. Interruptor de modalidad de reproducción 1
6. Conectar oscilador de onda sinusoidal de 100 Hz y voltímetro electrónico de CA a "LINE IN" (entrada de línea).
7. Ajustar el oscilador de manera que la entrada de "LINE IN" sea 319 mV.

Paso	Item	Piezas ajustadas	Procedimiento de adjuste
1	0 dB	VR213 **(Fig. 8)**	• Ajustar VR213 de manera que 0 dB (B16) de medidor de nivel de la derecha comience a iluminarse. **(Fig. 9)**
2	Equilibrio	VR211 **(Fig. 8)**	• Ajustar VR211 de manera que 0 dB (B16) de medidor de nivel de la izquierda comience a iluminarse. **(Fig. 9)**
3	Tiempo de	VR212 **(Fig. 8)**	• Instantáneamente interrumpir la entrada de "LINE IN" y comprobar las caídas de los canales derecho e izquierdo del medidor de nivel. • Si hay una diferencia entre los canales derecho e izquierdo, ajustar VR212 hasta que no haya diferencia.

■ ADJUSTMENT POINTS

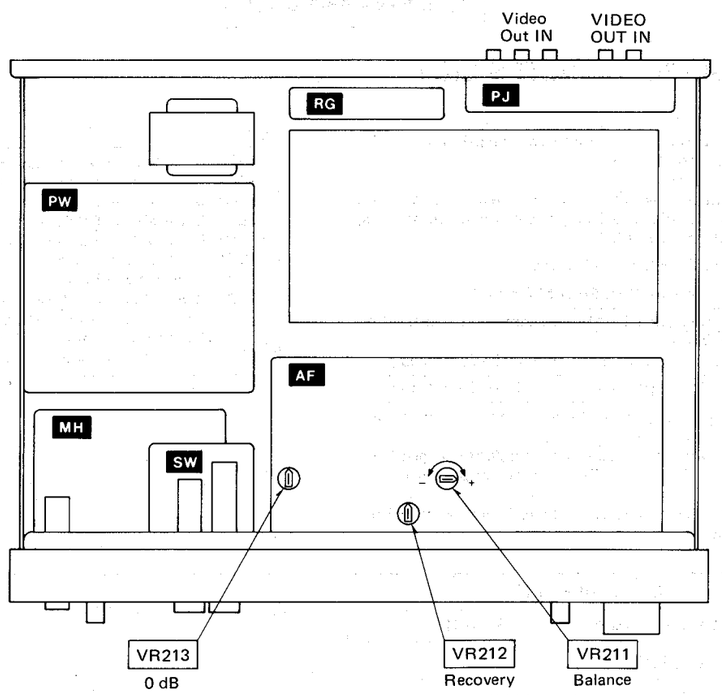


Fig. 8
(Abb. 9)

• Display

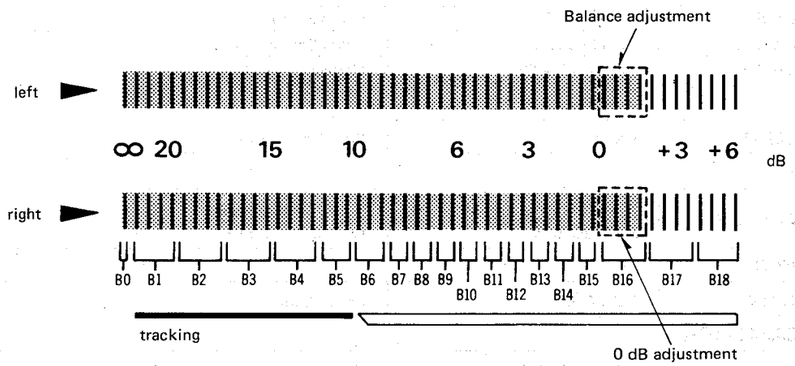
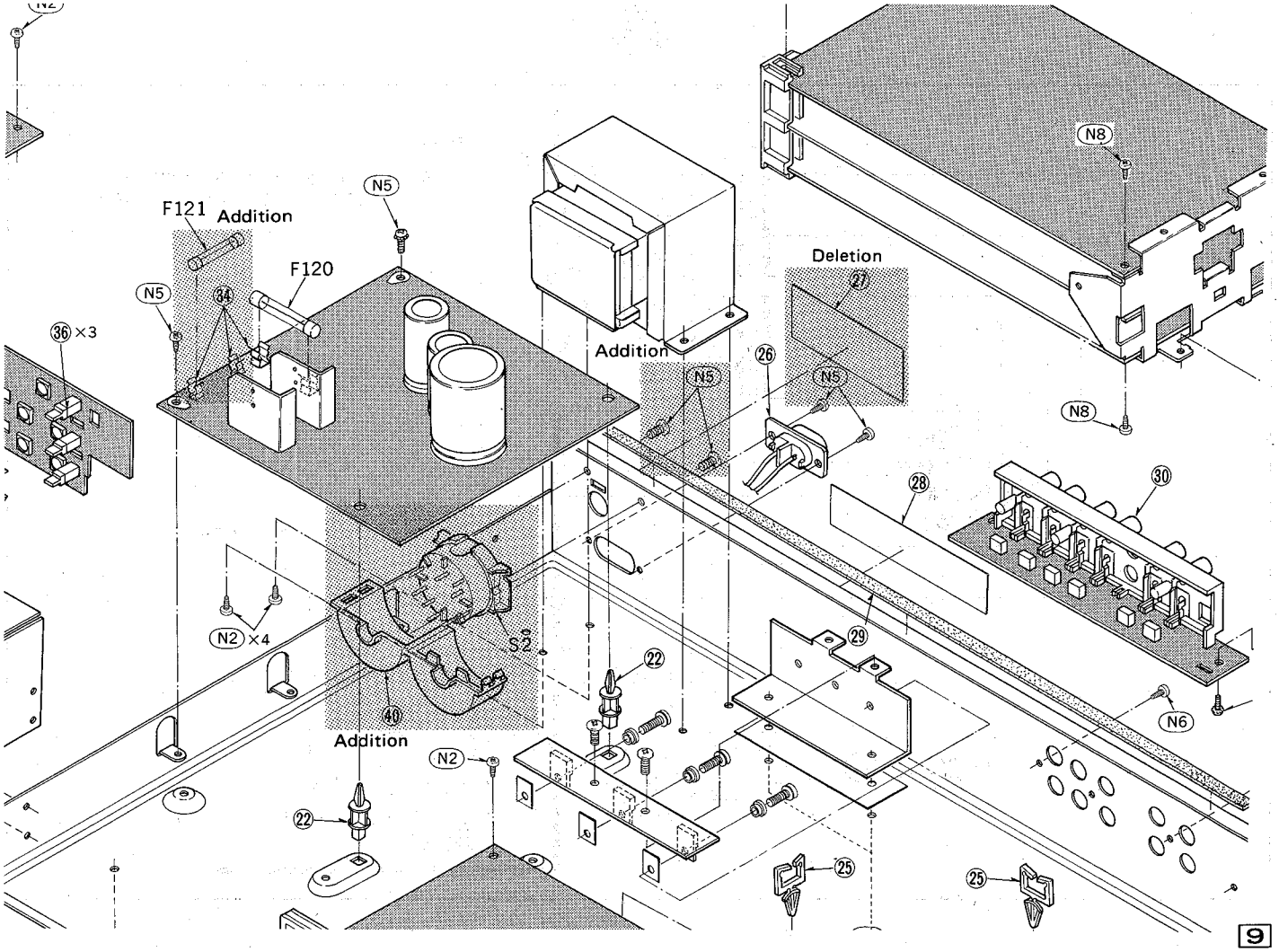

Balance adjustment
left
right
∞ 20 15 10 6 3 0 +3 +6 dB
B0 B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B11 B12 B13 B14 B15 B16 B17 B18
tracking
0 dB adjustment

Fig. 9
(Abb. 9)

Ref. No.	Change of Part No. SV-110 [M] → SV-110			Part Name & Description	Per Set (Pcs.)	Remarks
ACCESSORIES						
A1	SSNU110M01	SSNU110G01	[EK]	Instruction Book	1	
		SSNU110I01	[Ei]	Instruction Book	1	
		SSNU110X01	[EG, EF, XA]	Instruction Book	1	
		SSNU110P01	[PC]	Instruction Book	1	
		SSNU110S01E	[Other areas]	Instruction Book	1	
A2	SFDAC05M01	SFDAC05G02	[EK]	AC Cord	1	⚠
		SFDAC05X02	[XA]	AC Cord	1	⚠
		SFDAC05N01	[PC]	AC Cord	1	⚠
		SFDAC05E02	[Other areas]	AC Cord	1	⚠
A6	Addition	----------	[PC, NXA]	----------	0	NTSC
		SSDK101S01		BNC Adaptor	2	PAL
A7	Addition	SFDKI19118	[XA] only	2 Pin-Plug	1	⚠
A8	Addition	QJP0603S	[PC] only	Adaptor, Gimens	1	⚠
PACKING PARTS						
P1	SSHP110M01	SSHP110C01	[EF] only	Carton Box (Silver)	1	○
		SSHP110M01	[Other areas]	Carton Box (Silver)	1	○
		SSHP110C11	[EF] only	Carton Box (Black)	1	Ⓚ
		SSHP110M11	[Other areas]	Carton Box (Black)	1	Ⓚ

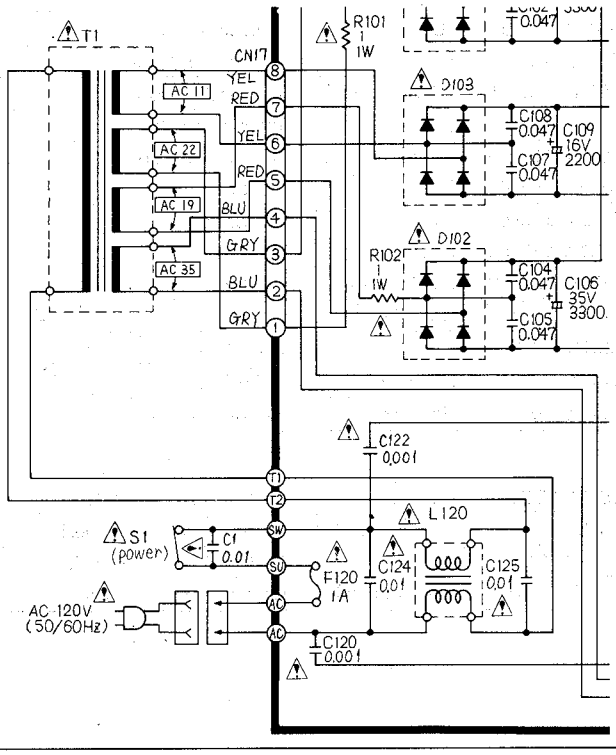
■ EXPLODED VIEW

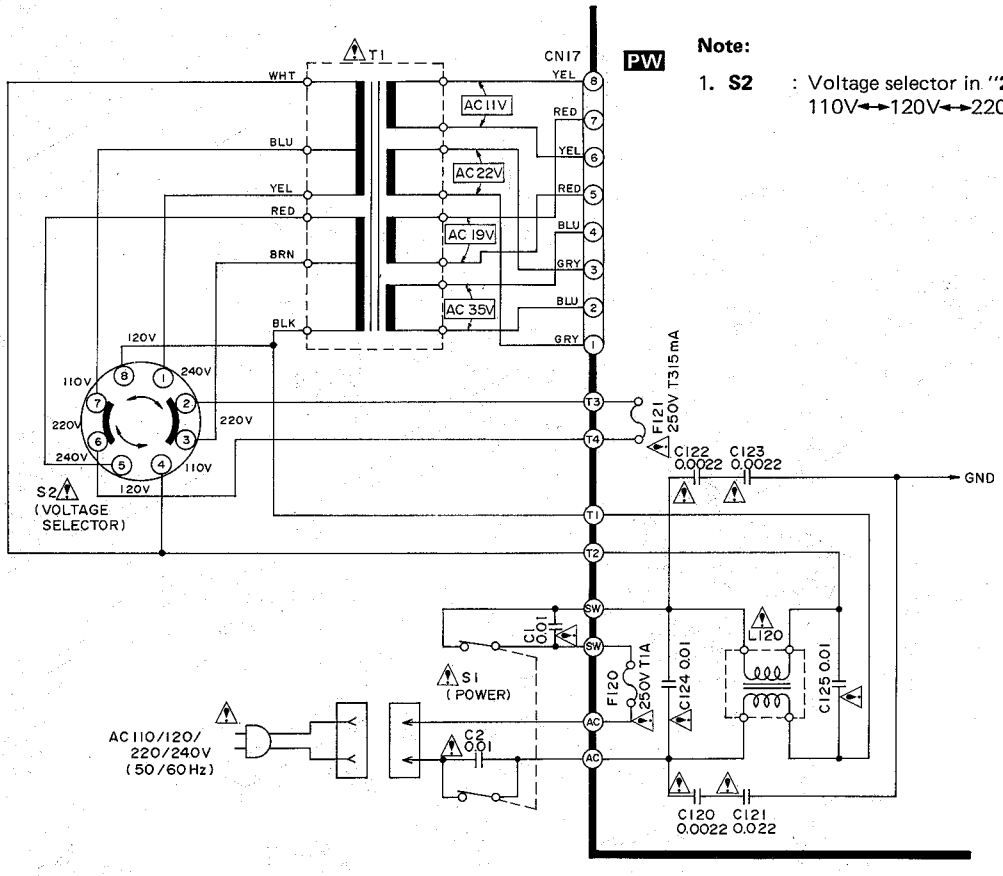


■ SCHEMATIC DIAGRAM

- **Power source circuit**

※ Product for U.S.A.





Note:

1. **S2** : Voltage selector in "**220V**" position.
   110V↔120V↔220V↔240V

■ RESISTORS AND CAPACITORS

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. NTSC stands for parts for NTSC format.
4. PAL stands for parts for PAL/SECAM format.
5. Parts without NTSC and PAL are common to both NTSC and PAL/SECAM format.
6. The "Ⓢ" mark is service standard parts and may differ from production parts.
7. The unit of resistance is (ohm). K = 1000 M = 1000K
8. The unit capacitance is μF (microfarad) P = 10^{-6} μF

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value

ERX	2	AN	J	2R2
Type	Wattage	Shape	Tolerance	Value

Resistor Type		Wattage		Tolerance	
ERD	: Carbon	25	: 1/4W	G	: ± 2%
ERG	: Metal Oxide	1	: 1W	J	: ± 5%
ERO	: Metal Film	S2	: 1/4W	K	: ± 10%
ERQ	: Fuse				

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity

ECEA	50	M	R47	R
Type	Voltage	Reculiarity use	Value	Special use

Capacitor Type		Voltage		Tolerance	
ECEA	: Electrolytic	OJ	: 6.3V	C	: ± 0.25pF
ECEB	: Electrolytic	1A	: 16V	G	: ± 2%
ECEA...N	: Non Polar Electrolytic	1C	: 16V	J	: ± 5%
ECCD	: Ceramic	1E	: 25V	K	: ± 10%
ECCR	: Ceramic	25	: 25V	M	: ± 20%
ECKD	: Ceramic	1V	: 35V	P	: +100%, −0%
ECQM	: Polyester	1H	: 50V	Z	: +80%, −20%
ECQP	: Polypropylene	KC	: 400V		
ECES	: Electrolytic				

● RESISTORS

Ref. No.	Part No.	Value
R101,102 ⚠	ERQ1CJ1R0	1
R104	ERDS2TJ103	10K
R105	ERDS2TJ152	1.5K
R106	ERDS2TJ103	10K
R107,108	ERDS2TJ221	220
R109,110	ERDS2TJ103	10K
R111 Ⓢ	ERGIANJ221	220
R112,113	ERDS2TJ681	680
R114	ERDS2TJ103	10K
R130	ERDS2TJ100	10
R131	ERDS2TJ221	220
R149,150	ERDS2TJ474	470K
R151,152	ERDS2TJ104	100K
R153,154	ER0S2TKG3902	39K
R155,156	ER0S2TKG3601	3.6K
R157,158	ER0S2TKG1102	11K
R159,160	ER0S2TKG2701	2.7K
R161,162	ER0S2TKG2701	2.7K
R163,164	ER0S2TKG2401	2.4K
R165,166	ER0S2TKG2401	2.4K
R167,168	ER0S2TKG3902	39K
R169,170	ER0S2TKG1802	18K
R171,172	ER0S2TKG1602	16K
R173,174	ER0S2TKG3601	3.6K
R175,176	ERDS2TJ333	33K
R177	ERDS2TJ102	1K
R178	ERDS2TJ472	4.7K
R185	ERDS2TJ472	4.7K
R186	ERDS2TJ471	470
R187	ERDS2TJ561	560
R188,189	ERDS2TJ103	10K
R190	ERDS2TJ271	270
R191	ERDS2TJ472	4.7K
R192,193	ERDS2TJ103	10K
R195	ERDS2TJ103	10K
R196	ERDS2TJ472	4.7K
R197	ERDS2TJ332	3.3K
R198	ERDS2TJ471	470
R199	ERDS2TJ472	4.7K
R200	ERDS2TJ102	1K
R201	ERDS2TJ472	4.7K
R202	ERDS2TJ102	1K
R203	ERDS2TJ472	4.7K
R204	ERDS2TJ102	1K
R205	ERDS2TJ102	1K
R206,207	ERDS2TJ271	270
R208	ERDS2TJ102	1K
R209	ERDS2TJ472	4.7K
R210	ERDS2TJ103	10K
R211,212	ER0S2TKG5102	51K
R213	ERDS2TJ333	33K
R214	ER0S2TKG3902	39K
R215,216	ERDS2TJ472	4.7K
R217	ERDS2TJ104	100K
R218	ERDS2TJ474	470K
R219,220	ERDS2TJ433	43K
R221,222	ERDS2TJ682	6.8K
R223,224	ERDS2TJ473	47K
R225	ERDS2TJ473	47K
R226,227	ERDS2TJ223	22K
R228,229	ERDS2TJ472	4.7K
R230	ERDS2TJ472	4.7K
R231	ERDS2TJ474	470K
R232	ERDS2TJ123	12K
R233	ERDS2TJ472	4.7K
R234	ERDS2TJ474	470K
R235	ERDS2TJ103	10K
R236	ERDS2TJ472	4.7K
R237	ERDS2TJ104	100K
R238	ERDS2TJ472	4.7K
R239	ERDS2TJ104	100K
R241	ERDS2TJ104	100K
R242	ERDS2TJ473	47K
R253	ERDS2TJ103	10K
R255,256	ERDS2TJ561	560
R257,258	ERDS2TJ473	47K
R259,260	ERDS2TJ221	220
R261,262	ERDS2TJ332	3.3K
R263,264	ERDS2TJ332	3.3K
R265,266	ERDS2TJ332	3.3K
R267,268	ERDS2TJ223	22K
R269,270	ERDS2TJ221	220
R271,272	ERDS2TJ103	10K
R273,274	ERDS2TJ104	100K
R275	ERDS2TJ102	1K
R276	ERDS2TJ561	560
R281,282	ERDS2TJ104	100K
R283,284	ERDS2TJ123	12K
R285,286	ERDS2TJ123	12K
R287,288	ERDS2TJ223	22K
R289,290	ERDS2TJ223	22K
R291,292	ERDS2TJ820	82
R293,294	ERDS2TJ820	82
R301	ERDS2TJ820	82
R302	ERDS2TJ472	4.7K
R303	ERDS2TJ223	22K
R304	ERDS2TJ472	4.7K
R305	ERDS2TJ222	2.2K
R306	ERDS2TJ272	2.7K
R307	ERDS2TJ102	1K
R308	ERDS2TJ102	1K
R309	ERDS2TJ472	4.7K
R310	ERDS2TJ472	4.7K
R311	ERDS2TJ393	39K
R312	ERDS2TJ472	4.7K
R313	ERDS2TJ122	1.2K
R314	ERDS2TJ272	2.7K
R315	ERDS2TJ183	18K
R316	ERDS2TJ472	4.7K
R317	ERDS2TJ153	15K
R318	ERDS2TJ680	68
R319	ERDS2TJ472	4.7K
R320	ERDS2TJ153	15K
R321	ERDS2TJ472	4.7K
R322	ERDS2TJ822	8.2K
R323	ERDS2TJ682	6.8K
R324	ERDS2TJ153	15K
R325	ERDS2TJ223	22K
R326	ERDS2TJ472	4.7K
R327	ERDS2TJ472	4.7K
R328	ERDS2TJ223	22K
R329	ERDS2TJ153	15K
R330	ERDS2TJ153	15K
R331	ERDS2TJ102	1K
R332	ERDS2TJ102	1K
R333	ERDS2TJ273	27K
R334	ERDS2TJ822	8.2K
R335	ERDS2TJ392	3.9K
R336	ERDS2TJ272	2.7K

Ref. No.	Part No.	Value
R337	ERDS2TJ102	1K
R338	ERDS2TJ102	1K
R339	ERDS2TJ102	1K
R340	ERDS2TJ102	1K
R341	ERDS2TJ103	10K
R342	ERDS2TJ103	10K
R343	ERDS2TJ102	1K
R344	ERDS2TJ153	15K
R345	ERDS2TJ153	15K
R346	ERDS2TJ123	12K
R347	ERDS2TJ103	10K
R349	ERDS2TJ102	1K
R350	ERDS2TJ473	47K
R353	ERDS2TJ153	15K
R354	ERDS2TJ103	10K
R355	ERDS2TJ103	10K
R356	ERDS2TJ122	1.2K
R357	ERDS2TJ102	1K
R358	ERDS2TJ122	1.2K
R359	ERDS2TJ152	1.5K
R360	ERDS2TJ153	15K
R361	ERDS2TJ104	100K
R362	ERDS2TJ123	12K
R363	ERDS2TJ103	10K
R364	ERDS2TJ103	10K
R365	ERDS2TJ103	10K
R366	ERDS2TJ103	10K
R367	ER0S2TKG1002	10K
R368	ER0S2TKG1002	10K
R369	ER0S2TKG1002	10K
R370	ER0S2TKG1002	10K
R371	ERDS2TJ221	220
R372	ERDS2TJ221	220
R373	ER0S2TKG1002	10K

Ref. No.	Part No.	Value
R374	ER0S2TKG1002	10K
R375	ER0S2TKG1002	10K
R376	ER0S2TKG1002	10K
R377	ER0S2TKG2002	20K
R378	ER0S2TKG2002	20K
R379	ER0S2TKG2401	2.4K
R380	ER0S2TKG2401	2.4K
R381	ER0S2TKG1302	13K
R382	ER0S2TKG1302	13K
R383	ER0S2TKG1302	13K
R384	ER0S2TKG1302	13K
R385	ER0S2TKG5101	5.1K
R386	ER0S2TKG5101	5.1K
R387	ERDS2TJ221	220
R388	ERDS2TJ332	3.3K
R389	ERDS2TJ332	3.3K
R390	ERDS2TJ102	1K
R391	ERDS2TJ332	3.3K
R392	ERDS2TJ332	3.3K
R393	ERDS2TJ472	4.7K
R394	ERDS2TJ473	47K
R395	ERDS2TJ472	4.7K
R396	ERDS2TJ221	220
R397	ERDS2TJ103	10K
R398	ERDS2TJ472	4.7K
R399	ERDS2TJ472	4.7K
R401 Ⓢ	ERD25FJ102	1K
R402 Ⓢ	ERD25FJ102	1K
R403 Ⓢ	ERD25TJ333	33K
R404 Ⓢ	ERD25TJ333	33K
R405 Ⓢ	ERD25TJ224	220K
R408 Ⓢ	ERD25FJ103	10K
R481 PAL	ERDS2TJ563	56K
R483 PAL	ERDS2TJ561	560
R485 PAL	ERDS2TJ103	10K
R486 PAL	ERDS2TJ103	10K

Ref. No.	Part No.	Value
R501	ERDS2TJ393	39K
R502	ERDS2TJ393	39K
R503	ERDS2TJ223	22K
R504	ERDS2TJ103	10K
R505	ERDS2TJ182	1.8K
R506	ERDS2TJ473	47K
R507	ERDS2TJ102	1K
R508	ERDS2TJ102	1K
R509	ERDS2TJ102	1K
R510	ERDS2TJ223	22K
R511	ERDS2TJ223	22K
R512	ERDS2TJ103	10K
R513	ERDS2TJ103	10K
R514	ERDS2TJ123	12K
R515	ERDS2TJ223	22K
R516	ERDS2TJ102	1K
R517	ERDS2TJ562	5.6K
R520	ERDS2TJ473	47K
R521	ER0S2TKG4640	464
R522	ER0S2TKG2800	280
R523	ER0S2TKG6340	634
R524	ER0S2TKG1101	1.1K
R525	ER0S2TKG1000	100
R526	ER0S2TKG2431	2.43K
R527	ERDS2TJ102	1K
R528	ERDS2TJ121	120
R529	ERDS2TJ121	120
R530	ERDS2TJ121	120
R531	ERDS2TJ121	120
R532	ERDS2TJ104	100K
R533	ERDS2TJ104	100K
R534	ERDS2TJ102	1K
R537	ERDS2TJ472	4.7K
R538	ERDS2TJ472	4.7K
R541	ERDS2TJ222	2.2K
R542	ERDS2TJ123	12K
R543	ERDS2TJ102	1K

Ref. No.	Part No.	Value
R545	ERDS2TJ105	1M
R546	ERDS2TJ470	47
R547	ERDS2TJ332	3.3K
R548	ERDS2TJ563	56K
R549	ERDS2TJ332	3.3K
R550	ERDS2TJ563	56K
R551	ERDS2TJ332	3.3K
R552	ERDS2TJ563	56K
R553	ERDS2TJ103	10K
R554	ERDS2TJ473	47K
R555	ERDS2TJ472	4.7K
R557	ERDS2TJ154	150K
R561	ERDS2TJ472	4.7K
R562	ERDS2TJ561	560
R563	ERDS2TJ103	10K
R564	ERDS2TJ473	47K
R565	ERDS2TJ473	47K
R601,602	ERDS2TJ221	220
R631,632	ERDS2TJ472	4.7K
R633,634	ERDS2TJ472	4.7K
R635	ERDS2TJ472	4.7K
R636	ERDS2TJ681	680
R637	ERDS2TJ471	470
R638	ERDS2TJ681	680

● CAPACITORS

Ref. No.	Part No.	Value
C1,2 ⚠	ECKDKC103PF	0.01
C101,102 Ⓢ	ECKD1H473ZF	0.047
C103 Ⓢ	ECEA1VU332	3300
C104,105 Ⓢ	ECKD1H473ZF	0.047
C106 Ⓢ	ECEA1VU332	3300
C107,108 Ⓢ	ECKD1H473ZF	0.047
C109	ECES1CV223Y	22000
C110 Ⓢ	ECEA1CU331B	330
C111 Ⓢ	ECEA1EU221	220
C112 Ⓢ	ECEA1CU331B	330
C113 Ⓢ	ECEA0JU101	100
C114 Ⓢ	ECEA0JU102	1000
C120～123 ⚠	ECKDHS222MD	0.0022
C124,125 ⚠	ECKDKC103PF	0.01
C128 Ⓢ	ECKD1H473ZF	0.047
C130,131 Ⓢ	ECEA1HUR47	0.47
C132 Ⓢ	ECEA1HUR47	0.47
C151,152 ⚠Ⓢ	ECEA1CN100S	10
C153,154	ECQP1392GZ	0.0039
C155,156 Ⓢ	ECCD1H331K	330P
C157,158 Ⓢ	ECQM1H104JZ	0.1
C159,160	ECQP1122GZ	0.0012
C161,162 Ⓢ	ECCD1H470K	47P
C163,164	ECQP1392GZ	0.0039
C165,166 ⚠Ⓢ	ECEA1CN100S	10
C171,172 Ⓢ	ECEA1CU331B	330
C173,174 Ⓢ	ECEA1HU3R3	3.3
C193 Ⓢ	ECEA0JU470	47
C194 Ⓢ	ECEA0JU471	470
C195,196 Ⓢ	ECKD1H103MD	0.01
C197,198 Ⓢ	ECKD1H103MD	0.01
C199 Ⓢ	ECEA1AU220	22
C211,212 ⚠Ⓢ	ECEA1HN2R2S	2.2
C213,214 Ⓢ	ECEA25M10R	10
C215 Ⓢ	ECEA1HU010	1
C216 Ⓢ	ECEA1CU470	47
C217 Ⓢ	ECQM1H473JZ	0.047
C218	ECEA1EU101	100
C255,256 ⚠Ⓢ	ECEA1CN100S	10
C257,258 Ⓢ	ECCD1H101K	100P
C259,260 Ⓢ	ECKD1H103MD	0.01

Ref. No.	Part No.	Value
C261,262 Ⓢ	ECEA0JU101	100
C263,264 Ⓢ	ECCD1H101K	100P
C265,266 ⚠Ⓢ	ECEA1CN100S	10
C267 Ⓢ	ECEA1CU331B	330
C268,269 Ⓢ	ECEA1CU221	220
C270 Ⓢ	ECEA1CU221	220
C281,282 Ⓢ	ECCD1H101K	100P
C283,284 Ⓢ	ECCD1H101K	100P
C285,286 ⚠Ⓢ	ECEA1HN010S	1
C287 ⚠Ⓢ	ECEA1CN100S	10
C301 Ⓢ	ECEA1CU220	22
C302 Ⓢ	ECEA1CU220	22
C303 Ⓢ	ECEA1CU220	22
C304 Ⓢ	ECCD1H470K	47P
C305 Ⓢ	ECEA1HU2R2	2.2
C306 Ⓢ	ECCD1H181K	180P
C307 Ⓢ	ECQM1H122JZ	0.0012
C308 Ⓢ	ECCD1H561K	560P
C309 Ⓢ	ECCD1H101K	100P
C310 ⚠Ⓢ	ECEA1HN010S	1
C312 Ⓢ	ECQM1H332JZ	0.0033
C313 Ⓢ	ECEA0JU330	33
C314 Ⓢ	ECEA1EU4R7	4.7
C320 Ⓢ	ECQM1H103JZ	0.01
C321 Ⓢ	ECKD1H473ZF	0.047
C322 Ⓢ	ECKD1H473ZF	0.047
C324 Ⓢ	ECKD1H473ZF	0.047
C325 Ⓢ	ECKD1H473ZF	0.047
C336	ECCD1H681J	680P
C364 Ⓢ	ECCD1H101K	100P
C365 ⚠Ⓢ	ECEA1CN101S	100
C366 ⚠Ⓢ	ECEA1CN101S	100
C367 Ⓢ	ECCD1H471K	470P
C368 Ⓢ	ECCD1H471K	470P
C369 Ⓢ	ECCD1H151K	150P
C370 Ⓢ	ECCD1H151K	150P
C371	ECQP1102GZ	0.001
C372	ECQP1102GZ	0.001
C373 Ⓢ	ECCD1H471K	470P
C374 Ⓢ	ECCD1H471K	470P
C375 Ⓢ	ECCD1H820K	82P
C376 Ⓢ	ECCD1H820K	82P
C377	ECQP1392GZ	0.0039
C378	ECQP1392GZ	0.0039

Ref. No.	Part No.	Value
C379 Ⓢ	ECCD1H220K	22P
C380 Ⓢ	ECEA1CU101	100
C381 Ⓢ	ECEA1CU101	100
C382 Ⓢ	ECEA0JU331	330
C383 Ⓢ	ECEA1AU221	220
C384 Ⓢ	ECEA0JU331	330
C385 Ⓢ	ECKD1H473ZF	0.047
C388 Ⓢ	ECEA1EU470	47
C389 Ⓢ	ECEA1EU470	47
C390 NTSC Ⓢ	ECEA0JU331	330
C391 NTSC Ⓢ	ECEA0JU331	330
C401 Ⓢ	ECKD1H473ZF	0.047
C402 Ⓢ	ECKD1H102KB	0.001
C403 Ⓢ	ECKD1H102KB	0.001
C404 Ⓢ	ECKD1H473ZF	0.047
C405 Ⓢ	ECKD1H473ZF	0.047
C406 Ⓢ	ECKD1H473ZF	0.047
C407 NTSC Ⓢ	ECCD1H470K	47P
C407 PAL Ⓢ	ECCD1H100KC	10P
C408 NTSC Ⓢ	ECCD1H470K	47P
C408 PAL Ⓢ	ECCD1H100KC	10P
C409 Ⓢ	ECKD1H473ZF	0.047
C410 Ⓢ	ECKD1H473ZF	0.047
C411 Ⓢ	ECKD1H473ZF	0.047
C412 Ⓢ	ECEB0JS102	1000
C414 Ⓢ	ECCD1H391J	390P
C481 PAL Ⓢ	ECQM1H103JZ	0.01
C485 PAL ⚠	ECEA1CN100S	10
C486 PAL Ⓢ	ECEA1HU010	1
C487 PAL Ⓢ	ECCD1H121JZ	120P
C490 PAL Ⓢ	ECEA0JU470	47
C491 PAL Ⓢ	ECKD1H103MD	0.01
C492 PAL Ⓢ	ECKD1H103MD	0.01
C501 Ⓢ	ECQM1H103JZ	0.01
C502 Ⓢ	ECEA1EU3R3	3.3
C503 Ⓢ	ECQM1H102JZ	0.001
C504 Ⓢ	ECQM1H102JZ	0.001
C505 Ⓢ	ECQM1H103JZ	0.01
C506 Ⓢ	ECCD1H101K	100P
C507 Ⓢ	ECCD1H101K	100P
C508 Ⓢ	ECQM1H104JZ	0.1

Ref. No.	Part No.	Value
C509 Ⓢ	ECQM1H104JZ	0.1
C510 Ⓢ	ECQM1H104JZ	0.1
C511 Ⓢ	ECQM1H104JZ	0.1
C514 Ⓢ	ECKD1H473ZF	0.047
C515 Ⓢ	ECEA0JU101	100
C516 Ⓢ	ECEA0JU471	470
C517 Ⓢ	ECKD1H473ZF	0.047
C518 Ⓢ	ECEA0JU471	470
C519 Ⓢ	ECKD1H473ZF	0.047
C520 Ⓢ	ECEA1HU010	1
C523 Ⓢ	ECKD1H473ZF	0.047
C524 Ⓢ	ECEA0JU221	220
C525 Ⓢ	ECKD1H473ZF	0.047
C526 Ⓢ	ECKD1H473ZF	0.047
C527,528 Ⓢ	ECKD1H473ZF	0.047
C531 Ⓢ	ECEA0JU471	470
C532 Ⓢ	ECEA0JU471	470
C541 Ⓢ	ECQM1H103JZ	0.01
C542 Ⓢ	ECEA1CU100	10
C543 Ⓢ	ECKD1H104ZF	0.1
C544 Ⓢ	ECKD1H104ZF	0.1
C546 Ⓢ	ECCD1H680K	68P
C547 Ⓢ	ECCD1H070CC	7P
C548 Ⓢ	ECCD1H070CC	7P
C549 Ⓢ	ECCD1H070CC	7P
C550 Ⓢ	ECCD1H070CC	7P
C551 Ⓢ	ECQM1H102JZ	0.001
C552 Ⓢ	ECQM1H272JZ	0.0027
C554 Ⓢ	ECEA1CU100	10
C555 Ⓢ	ECQM1H223JZ	0.022
C557	ECQP1123JZ	0.012
C601,602 ⚠Ⓢ	ECEA1CN100S	10
C603,604 Ⓢ	ECQM1H332JZ	0.0033
C641 ⚠Ⓢ	ECEA1CN100S	10

■ REPLACEMENT PARTS LIST

Notes:

1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Compornents identified by ⚠ mark have special characterstics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
4. [NTSC] stands for parts for NTSC format.
5. [PAL] stands for parts for PAL/SECAM format.
6. Parts without [NTSC] and [PAL] are common to both NTSC and PAL/SECAM format.
7. The "Ⓢ" mark is service standard parts and may differ from production parts.
8. The parenthesized numbers in the columns of description stand for the quantity per set.
9. Ⓚ-marked parts are used for black only, while ○-marked parts are for silver type only.
10. Parts other than Ⓚ-and ○-marked are used for both black and silver types.

[Black the model No. SV-110 (K)]

Areas

* [E] is available in Switzerland and Scandinavia.
* [EK] is available in United Kingdom.
* [EG] is available in F.R. Germany.
* [EB] is available in Belgium.
* [EH] is available in Holland.
* [EF] is available in France.
* [Ei] is available in Italy.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [PC] is available in European Audio Club.

Notes:

* Sets for [PC] area are of NTSC format.
* Set for [XA] area are available in NTSC format and PAL/SECAM format.
* Sets for other areas are of PAL/SECAM format.

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC101	AN78M20	Regulator,+20V
IC102	AN78M05	Regulator,+5V
IC130	AN78M15	Regulator,+15V
IC131	AN78M12	Regulator,+12V
IC132	AN7805	Regulator,+5V
IC151,153,154	SVINJ4559DDM	Pri-emphasis, Buffer
IC155,156	MN6631	Analog Switch
IC191	MN1420PCF	Micro Computer
IC192	MN4001B	NOR Gate
IC193	MN4040B	12-Bit Binary Counter
IC194	MN4013B	D Flip Flop
IC211,212	AN6552F	Buffer
IC213	SVIUPD4066BC	Quad Bilateral Switch
IC214	AN6870N	Display Drive
IC255	SVINJ4559DDM	Microphone Amprifier
IC281,282	SVINJM4556S	Head-phone Amprifier
IC302	DN74LS123	Multivibrator
IC303	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC305	DN74LS00 or SVIHD74LS00P	NAND Gate
IC308,309	SVITL082CP	Operational Amp.
IC310	AN6552F	Comparator
IC311	AN6914	Comparator
IC312,313	SVITL810CP	Operational Amp.
IC365,366	SVITL082CP	Operational Amp.
IC367,368	SVIUPD4066BC	Quad Bilateral Switch
IC369	SVITL082CP	Operational Amp.
IC370,371	SVIUPD4066BC	Quad Bilateral Switch
IC372	DN74LS126A or SVIHD74LS126	Buffer
IC373,374	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC375	EHKMA6196	D-A/A-D Converter
IC377,378	SVITL082CP	Operational Amp.
IC379	DN74LS02	NOR Gate
IC401	MN6603	REC/PB Control

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC402,404	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC403	DN74LS04	Inverter
IC405	DN74LS125A or SVIHD74LS125	Buffer Gate
IC406	DN74LS123	Multivibrator
IC407	DN74LS86 or SVIHD74LS86P	Exclusive OR Gate
IC408	MN6602	PB Control
IC409	MN6601	REC Control
IC410,411	SVIHM6116P-4	Randam Access Memory
IC412	DN74LS161A or SVIHD74LS161	4-Bit Binary Counter
IC413	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC414	DN74LS02	NOR Gate
IC415	DN74LS161A or SVIHD74LS161	4-Bit Binary Counter
IC416	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC417,418	SVIHM6116P-4	Randam Access Memory
IC420	DN74LS123	Multivibrator
IC421	DN74LS126A or SVIHD74LS125	Buffer
IC481,482 [PAL]	DN74LS174 or SVIHD74LS174	D Flip Flop
IC483 [PAL]	DN74LS174 or SVIHD74LS174	D Flip Flop
IC485 [PAL]	DN74LS125A or SVIHD74LS125	Buffer Gate
IC486 [PAL]	DN74LS123	Multivibrator
IC487 [PAL]	SVITC5081AP	Phase Comparator
IC488 [PAL]	SVISN74LS628	Voltage Control OSC
IC501	DN74LS02	NOR Gate
IC502	DN74LS123	Multivibrator
IC503	DN74LS00 or SVIHD74LS00P	NAND Gate
IC504,505	DN74LS123	Multivibrator
IC506	DN74LS02	NOR Gate
IC507	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC508	DN74LS00 or SVIHD74LS00P	NAND Gate
IC509	MN1542PCK	Micro Computer

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC510	DN74LS157 or SVIHD74LS157	Multiplexer
IC511	SVISN74LS393	4Bit Binary Counter
IC512	SVITL082CP	Operational Amp.
IC513	SVIUPD4066BC	Quad Bilateral Switch
IC514	SVITC40H004P	Inverter
IC515	SVITL082CP	Operational Amp.
IC516	SVINJ4559DDM	Operational Amp.
IC517~520	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC521	DN74LS00 or SVIHD74LS00P	NAND Gate
IC522	DN74LS126A or SVIHD74LS126	Buffer
IC524	DN74LS04	Inverter
TRANSISTORS		
Q101,102	2SD636	Muting Circuit
Q103	2SB641	Muting Circuit
Q104	2SD636	Muting Circuit
Q105	2SB641	Muting Circuit
Q151	2SD636	L.E.D.Drive
Q191	2SB641	Switching
Q192,193	2SD636	Switching
Q194,195	2SD636	Switching
Q211,212	2SD636	Buffer
Q213,214	2SD636	Buffer
Q215	2SD636	Buffer
Q216	2SB641	Switching
Q217	2SD636	Switching
Q218	2SB641	Switching
Q255,256	2SC2385-G	Microphone Amprifier
Q257,258	2SC2385-G	Microphone Amprifier
Q301	2SC2377	Buffer
Q302,303	2SD636	Input Amp.
Q304	2SC2377	Input Amp.
Q305,306	2SD636	Input Amp. C SYNC Separator
Q307,308	2SB641	C SYNC Separator
Q309	2SD636	Switching
Q310	2SB641	FET Driver
Q311	2SK301	Switching
Q313	2SD636	Switching
Q365	2SD636	Switching

SV-110

Ref. No.	Part No.	Description
TRANSISTORS		
Q501,502	2SD636	Video Amp.
Q503	2SB641	Video Amp.
Q504	2SD636	Video Amp.
Q505,506	2SB641	Video Amp. & Swiching
Q507,508	2SB641	Switching
Q510	2SB641	Switching
DIODES		
D101,102 ⚠	SVDS1WB10	Rectifier
D103 ⚠	SVDS4VB10	Rectifier
D104	MA4075	7.5V,Zener
D105	MA4056	5.6V,Zener
D106,107 Ⓢ	MA162A	Switching
D151	MA165	Switching
D191	MA165	Switching
D193	MA165	Switching
D211,212	MA165	Switching
D213	MA4068	6.8V,Zener
D214,215 Ⓢ	MA26TO-A	Switching
D216	MA165	Switching
D255	MA165	Switching
D301,302	MA165	Switching
D303,304	MA165	Switching
D305,306	MA165	Switching
D307,308	MA165	Switching
D365,366	MA165	Switching
D367	MA4051	5.1V,Zener
D501 Ⓢ	MA26TO-A	Switching
D502	SVDKV1236Z	Variable Capacitor Diode
D503	MA165	Switching
D611,612	LN0401GP3	System Indicator
D613,614	SVDLD-101MG	System Indicator

Ref. No.	Part No.	Description
DIODES		
D631,633	LN229RP	REC/COPY Indicator
D632	LN329YP	PBMUTE Indicator
OSCILLATORS		
X401 NTSC	SVQ43U1586	Crystal, 15.86MHz
X401 PAL	SVQ18C1575	Crystal, 15.75MHz
X501,502	EF0A4R0M01A	Ceramic, 4MHz
COILS and TRANSFORMERS		
L120 ⚠	ELF18D112	Line Filter
L301	ELB5F7	Low Pass Filter
L302	ELB5G038	Delay Line
L501,502	SLQ0930T300C	Balun Coil
L503~506	ELEH100JA	Choke Coil
LPF151,152	EULBPF304	Low Pass Filter
T1 ⚠	SLTF6642	Power Source
VARIABLE RESISTORS		
VR151	EWGGDA510375	Recording Balance
VR152	EWJKDA016A15	Recording Balance Adjustment 20kΩ(B)
VR211	EVN38CA00B24	Recovery Time Adjustment 100kΩ(B)
VR212	EVN38CA00B16	OdB Adjustment 10kΩ(B)
VR213	EVN38CA00B14	Head Phone Level
VR255	EWCSNAF15AF5	Offset Adj. 20kΩ(B)
VR365,366	EVN38CA00B24	5kΩ(B)
VR501	EVN38CA00B53	10kΩ(B)
VR502,503	EVN38CA00B14	

Ref. No.	Part No.	Description
VARIABLE RESISTORS		
VR504	EVMG0GA01B54	50kΩ(B)
VARIABLE CAPACITOR		
TC485 PAL	ECV1ZW50X32E	ADCK PLL Lock Adj.
FLUORESCENT DISPLAY TUBE		
FL201	SSDQBG193Z	Level/Tracking Indication
RELAY		
RLY151,260	SFDYQ11N02	Muting
SWITCHES		
S1 ⚠	SFDSSDS3P	Power Switch
S2 ⚠	ESE37200	Voltage Selector
S621	SSDS2K4KB1X	Master Switch, Playback Mode Switch
S631	EVQQJ104K	Recording/Copy Muting
S632	EVQQJ104K	Peak Hold
S633	EVQQJ104K	Tracking
S634	EVQQJ104K	Copy
S635	EVQQJ104K	Playback Muting
FUSE		
F120 ⚠	XBA2C10TRO	T1A,250V
F121 ⚠	XBA2C03TRO	T315mA,250V

Ref. No.	Part No.	Description
CABINET AND CHASSIS PARTS		
1 ○	SSBP110N01E	Front Panel(Silver),with Power Switch Button (1)
1 Ⓚ	SSBP110N11E	Front Panel(Black),with Power Switch Button (1)
2	SBC261-1	Button,Power Switch (1)
3	SUS193	Spring,Power Switch Button (2)
4	SSUZ110N03	Sheet (2)
5	SBN947-1	Knob,Recording Balance/ Head Phones Level (2)
6	SBN943-1	Knob,Recording Level (1)
7	SSKT110N07	Button,Peak Hold (1)
8	SSKT110N09	Button,Tracking (1)
9	SSKT110N08	Button,Play Back Muting (1)
10	SSKT110N10	Button,Copy (1)
11	SSKT110N02	Button,Recording Muting (1)
12	SSQA110N01	Spring,Buttons (4)
13 ○	SSUM110N01E	Sub Panel (Silver) (1)
13 Ⓚ	SSUM110N11E	Sub Panel (Black) (1)
14 ○	SSUP110N03	Cabinet (Silver) (1)
14 Ⓚ	SSUP110N13	Cabinet (Black) (1)
15	SBC315-4	Button,PB Mode/Master VTR Selector (2)
16	SSDJ3315020	Jack,Head Phone (1)
17	SSDJ3315010	Jack,Microphone (2)
18	SJF3225N	Terminal Plate,Video Input/Output (1)
19	SSUM110N02	Holder,L.E.D. (1)
20	SSUP110N01	Bottom Board (1)
21	SKL117-1	Foot (4)
22	SSUM110N03	Spacer,P.C.Board (2)
23	SFDBC07-01	Bushing,Regulator IC (3)
24	SFDCC07-01	Insulator, Regulator IC (3)
25	SSUM110N04	Clamper,Lead Wires (2)
26〔XA,PC〕 ⚠	SFDJHSC0491	Jack,AC IN (1)
26〔Other areas〕 ⚠	SFDJHSC0516	Jack,AC IN (1)
28〔E〕	SFNN110S01	Name Plate (1)

Ref. No.	Part No.	Description
28〔PC〕	SFNN110P02	Name Plate (1)
28〔XA〕	SFNN110X01	Name Plate (1)
28〔EK〕	SSNN110G01	Name Plate (1)
28〔Other areas〕	SSNN110R1	Name Plate (1)
29	SSUZ101N01	Felt (1)
30	SJF3059-4N	Terminal Plate, Line Input/Output, Video Input/Output, Monitor Output (1)
31	SSUM101N08	Latch,P.C.B (2)
32	SSUM110N08	Bracket (1)
34	SJT347	Holder,Fuses (4)
35	SFDJW-D0603	Connector (3pin) (2)
35	SFDJW-D0605	Connector (5pin) (1)
35	SFDJW-D0606	Connector (6pin) (1)
36	SSGZ110N01	Spacer,L.E.D. (3)
37 ○	SSGK110N01	Cap(Silver),Video Input/Output Terminal (1)
37 Ⓚ	SSGK110N11	Cap(Black),Video Input/Output Terminal (1)
38	SSKK110N02	Filter (1)
39	SSDC110N01	Sheet, (1)
40	SUV453	Cover, Voltage Selector (1)
SCREWS,WASHERS AND NUTS		
N1 Ⓢ	XTN3+6B	Screw,Front Panel (7)
N2 Ⓢ	XTV3+6BFZ	Screw,P.C.Board Power Transformer, Foot (15)
N3 Ⓢ	XTV3+6BFZ	Screw,Rec Mute Button (1)
N4 Ⓢ○	XTB4+8BFN	Screw,Cabinet(Silver) (4)
N4 ⓈⓀ	XTB4+8BFZ	Screw,Cabinet(Black) (4)
N5	SRXG010N12	Screw,Power Switch Voltage Selector P.C.Board Heat Sink,A.C.Socket (11)
N6 Ⓢ	XTV3+8BFZ	Screw,Terminal Plate (4)
N7	XTN3+55J	Screw, (2)
N8 Ⓢ	XTV3+6BFN	Screw, P.C.Board (12)
N9 Ⓢ	XTV3+8BFN	Screw,P.C.Board (2)

Ref. No.	Part No.	Description
N10 Ⓢ	XSN3+8S	Screw,Regulator IC (3)
N10 Ⓢ	XWA3B	Washer,Regulator IC (3)
N11	SSXW110N01	Washer,Volume (2)
N12 Ⓢ	XNS12	Nut,Head Phone Jack, Microphone Jack (2)
N13 Ⓢ	XNS8	Nut,Volume (3)
ACCESSORIES		
A1〔EK〕	SSNU110G01	Instruction Book (1)
A1〔Ei〕	SSNU110I01	Instruction Book (1)
A1〔EG, EF,XA〕	SSNU110X01	Instruction Book (1)
A1〔PC〕	SSNUN0P01	INstructiuon Book (1)
A1〔Other areas〕	SSNU110S01E	Instruction Book (1)
A2〔EK〕 ⚠	SFDAC05G02	AC Cord (1)
A2〔XA〕 ⚠	SFDAC05X02	AC Cord (1)
A2〔PC〕 ⚠	SFDAC05N01	AC Cord (1)
A2〔Other areas〕 ⚠	SFDAC05E02	AC Cord (1)
A3	SFDHC05N01	Cord,Line Input/Output (2)
A4	SSDH101N02	Cord,Video Input (2)
A5	SSDK101S01	BNC Adaptor (2) Instruction Book (1)
A6 PAL	SSDK101S01	BNC Adaptor (2)
A7〔XA〕 ⚠ only	SFDKI19118	2pin-Plug (1)
A8〔PC〕 ⚠ only	QJP0603S	Gimens Adaptor (1)
PACKING PARTS		
P1〔EF〕 ○ only	SSHP110C01	Carton Box(Silver) (1)
P1〔Other areas〕 ○	SSHP110M01	Carton Box(Silver) (1)
P1〔EF〕 Ⓚ only	SSHP110C11	Carton Box(Black) (1)
P1〔Other areas〕 Ⓚ	SSHP110M11	Carton Box(Black) (1)
P2	SSHH110N01E	Pad,Front(Left) (1)
P3	SSHH110N02E	Pad,Front(Right) (1)
P4	SSHH110N03	Pad,Rear(Left) (1)
P5	SSHH110N04	Pad,Rear(Right) (1)
P6	SSHD110N01	Box,Cords (1)
P7	SFYH60×60	Polyethylene Bag,Set (1)
P8	SFYH17×16	Polyethylene Bag,Cords (3)

Printed in Japan
840203700 Ⓗ TK

ORDER NO. DAD84020065C1

Service Manual

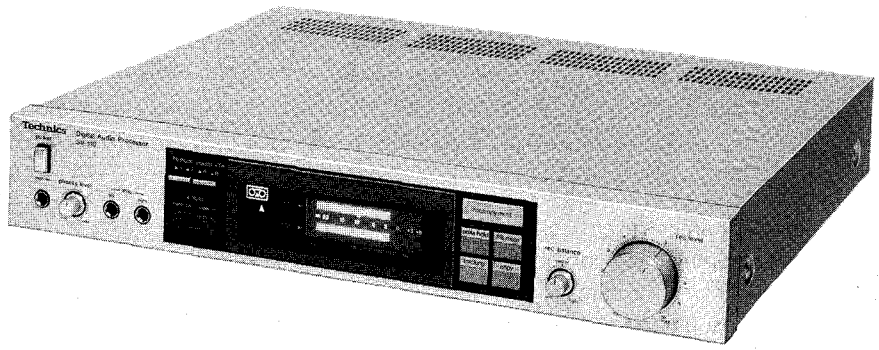
Digital Audio Processor

DIGITAL

For NTSC format

SV-110

[M], [MC]



Areas

* [M] is available in U.S.A.
* [MC] is available in Canada.

Specifications

Specifications are subject to change without notice the further improvement.
Weights and dimensions shown are approximate.

■ General

Power supply:	120 V, AC 60 Hz
Power consumption:	40 W
Dimensions:	43 W x 37.5 D x 7.6 H cm (16-15/16" x 14-3/4" x 3")
Weight:	6.1 kg (13.7 lb.)

■ System Type

Type:	Digital audio processor
PCM standard:	Consumer PCM encoder/decoder standards file STC-007 of the EIAJ stereo technical committee, video technical committee.
Quantization:	Recording: with emphasis
Coding:	14-bit linear
Number or audio channels:	2 (L, R stereo)
Frequency response:	2 Hz ~ 20 kHz (± 0.5 dB)
Total harmonic distortion:	0.01% or less (1 kHz, 0 dB)
Dynamic range:	86 dB or more
Wow and flutter:	Unmeasurable (Below measurement threshold)

■ Input level and impedance

Line:	55 mV [at reference input level (–15 dB indication)] / 50 kΩ
Microphone:	1.1 mV [at reference input level (–15 dB indication)] / 600 Ω
Video:	1Vp-p/75 Ω

■ Output level and impedance

Line:	310mV [at reference output level (–15 dB indication)] / 220 Ω
Video:	1Vp-p/75 Ω
Monitor:	1Vp-p/75 Ω

Technics

Matsushita Engineering and Service Company
50 Meadowland Parkway,
Secaucus. New Jersey 07094

Panasonic Hawaii Inc.
91-238 Kauhi St. Ewa Beach
P.O. Box 774
Honolulu, Hawaii 96808-0774

Matsushita Electric of Canada Limited
5770 Ambler Drive, Mississauga,
Ontario, L4W 2T3

Panasonic Sales Company, Division of Matsushita Electric of Puerto Rico, Inc.
Ave, 65 De Infanteria, KM 9.7
Victoria Industrial Park
Carolina, Puerto Rico 00630

■ CONTENTS

	Page
SAFETY PRECAUTION	2
LOCATION OF CONTROLS	3
FUNCTIONS	4
CONNECTION AND OPERATION	5
DISASSEMBLY INSTRUCTION	6
TROUBLE SHOOTING	8
CHECKING BY USE OF A TV SET	8
ABOUT VIDEO CASSETTES AND RECORDERS	9
MEASUREMENTS AND ADJUSTMENT	10
DISCRIPTION OF EACH TERMINAL OF MN1420PCF	11
RESISTORS AND CAPACITORS	12
REPLACEMENT PARTS LIST	14
EXPLODED VIEW	16
BLOCK DIAGRAM	18
CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM	21
PRINTED CIRCUIT BOARDS	24
SCHEMATIC DIAGRAM	31

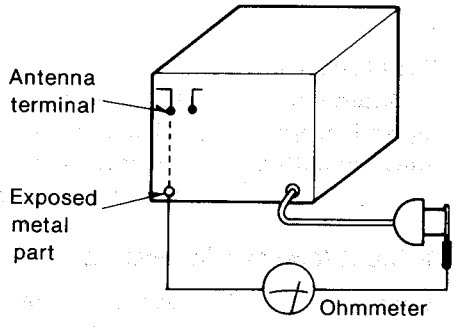
■ SAFETY PRECAUTION

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

• INSULATION RESISTANCE TEST

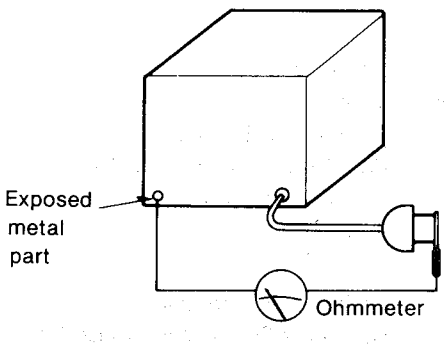
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3MΩ and 5.2MΩ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance = 3MΩ—5.2MΩ

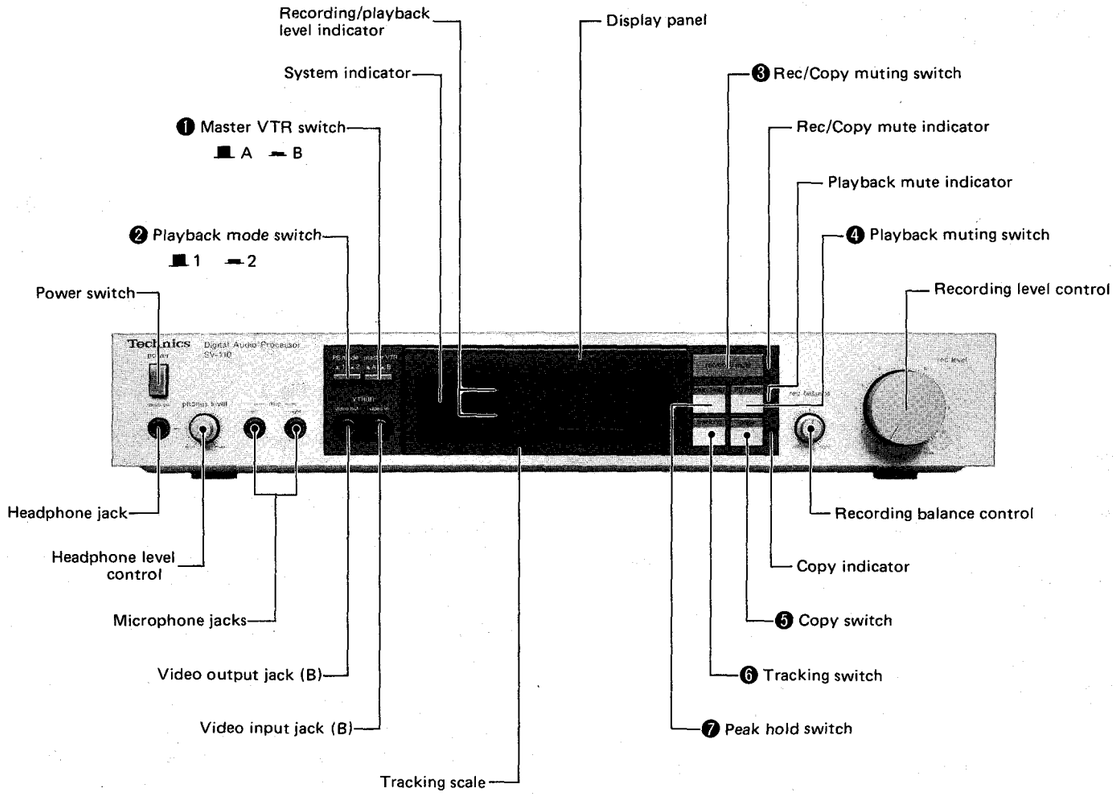


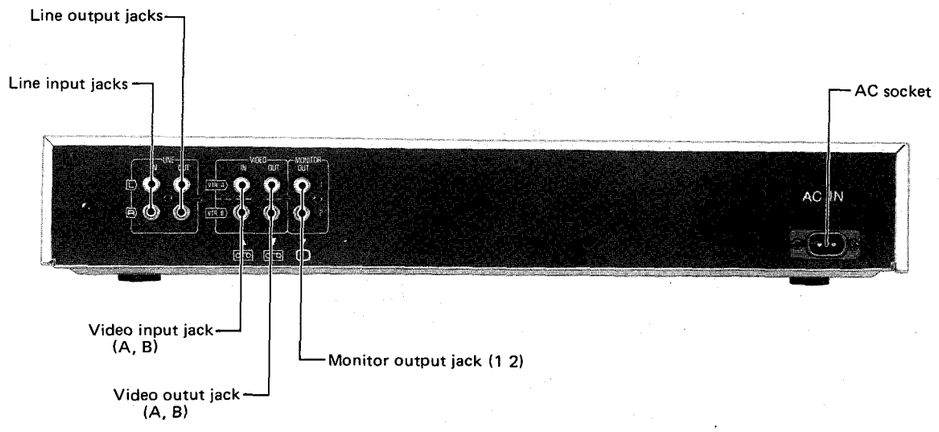
(Fig. B)

Resistance = Approx ∞

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

■ LOCATION OF CONTROLS





■ FUNCTIONS

❶ Master VTR switch (master VTR A B)
- When making digital tape copies, use this switch to select which VTR is playing the master tape.
- During ordinary PCM recording and playback, set this switch to the position (A or B) that matches the rear panel jacks to which your VTR is connected.
- This is also used to switch between video (position B) and PCM (position A) operation.

❷ Playback mode switch (playback mode 1 2)
- Used to select the demodulation mode that best matches the playback signal characteristics of the VTR being used.

❸ Recording muting switch (rec/copy mute)
- Press when you want to record a blank space on the tape.
- Recording muting (no-signal recording) only takes place as long as this switch is kept depressed during recording.

❹ Playback muting switch
- Playback muting along with the playback mute indicator are tuned on automatically when the unit's power is turned on. In this state, playback noise (caused by dropouts, poor tracking, and so forth) is muted automatically so that any parts of the tape with extremely poor quality are not reproduced.
- By pressing this switch , it turns playback muting off (and the indicator goes out).
- Press again to turn muting back on.

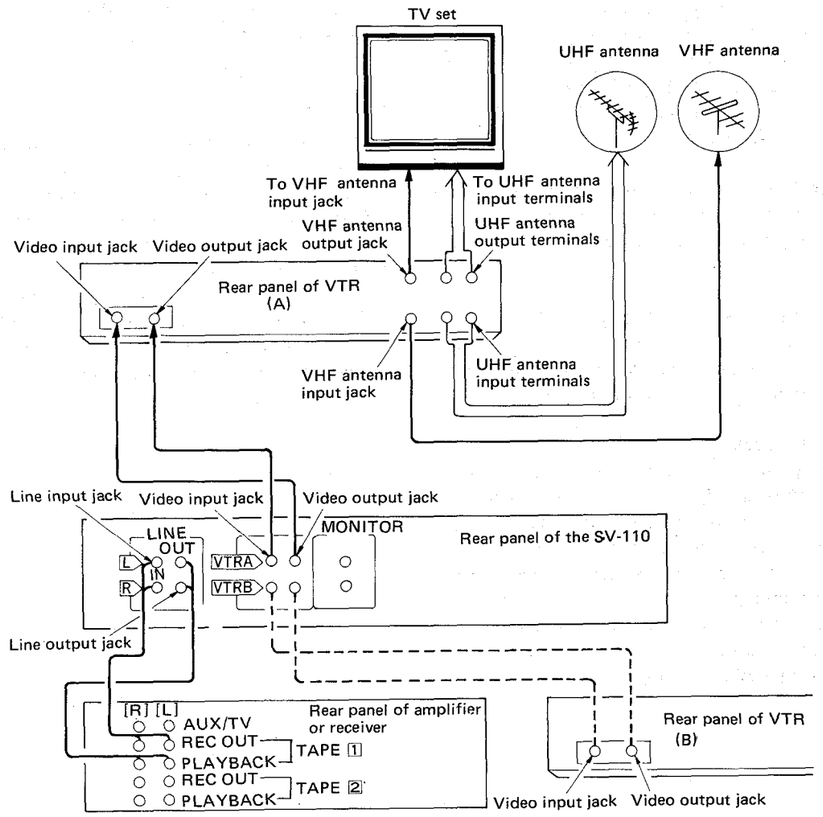
❺ Copy switch
- This is pressed when two VTRs are used to make digital tape copies. (Copy indicator on)
- Press again to return to normal condition. (Copy indicator off)

❻ Tracking switch
- When this is pressed, the level indicator scale markings go off and the left channel is no longer shown. Instead, the right channel display shows tracking quality.
- Press again to return to normal indication.

❼ Peak hold switch
- Peak hold indication is normally reset every two seconds.
- Press this switch to hold the peak indication for longer periods of time during recording or playback.
- Press again to return to the audio reset (2-second) peak hold indication.

■ CONNECTION AND OPERATION

- **Connections for PCM Recording/Playback and TV Program Recording/Playback**



- **How to operation**

PCM recording and playback

① Shift the video input select switch to "Ext. Input" or "Camera".
② Follow the normal procedure for PCM record and playback.

TV program recording and playback

① Shift the video input select switch to "Tuner" or "TV"..
② Follow the normal procedure for TV program record and playback.

Digital dubbing (copying)

① Connect record video (B) as shown above.
② Put the master video cassette into playback (master) video (A).
③ Set the master switch to " ▲ A", then shift playback video (A) to playback mode and recording video (B) to recording mode.

Note: With master switch set to " ▼ B", digital dubbing from video (B) to video (A) is possible.

④ To finish dubbing (copying), push the Rec/copy muting switch to prevent noise, and about 5 sec. later, stop the recording video.

■ DISASSEMBLY INSTRUCTIONS

- **How to remove the cabinet**

1. Remove the 4 setscrews **(Fig. 1 : ❶ ~ ❹)** of the cabinet.
2. Remove the cabinet.

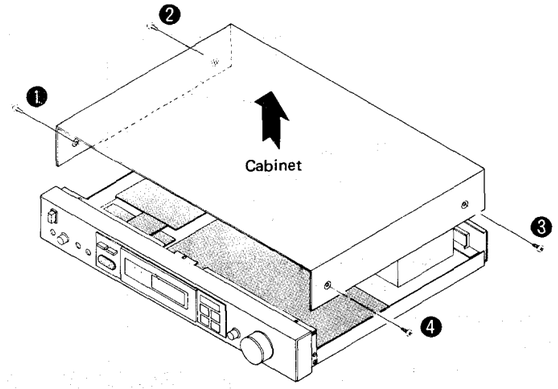


Fig. 1

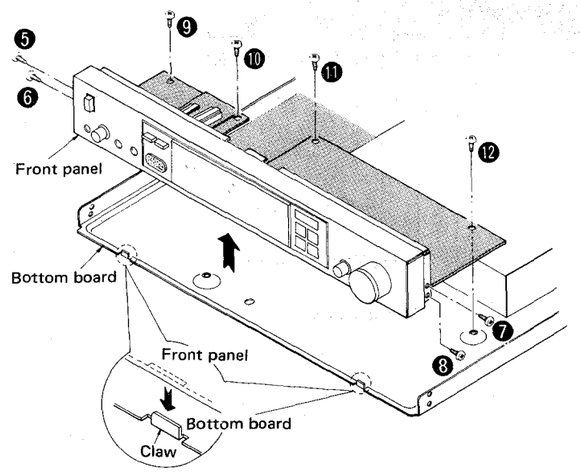


Fig. 2

- **How to remove the front panel**

1. Remove the cabinet.
2. Remove the 4 setscrews (red) **(Fig. 2 : ❺ ~ ❽)** of the front panel and the 4 setscrews **(Fig. 2 : ❾ ~ ⓬)** of the P.C.B.
3. Remove the 3 setscrews **(Fig. 3 : ⓭ ~ ⓯)** of the front panel.
4. Pull out the front panel with care not to scratch the knobs. **(See Fig. 3.)**
5. When fitting the front panel, match the claws of bottom board with the holes in the front panel. **(See Fig. 2.)**

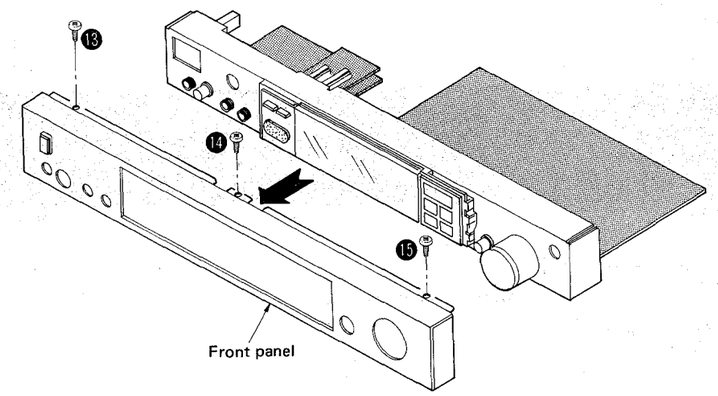


Fig. 3

• How to remove the sub-panel

1. Remove the cabinet and front panel.
2. Release the 3 claws of switch P.C.B. and the 2 claws of LED P.C.B. **(See Fig. 4.)**
3. Release the 2 claws of sub-panel and FL respectively. Then pull out the sub-panel. **(See Fig. 4.)**

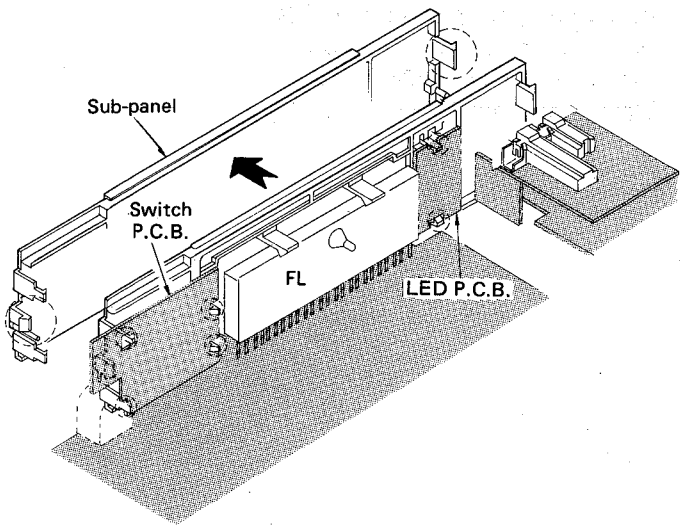


Fig. 4

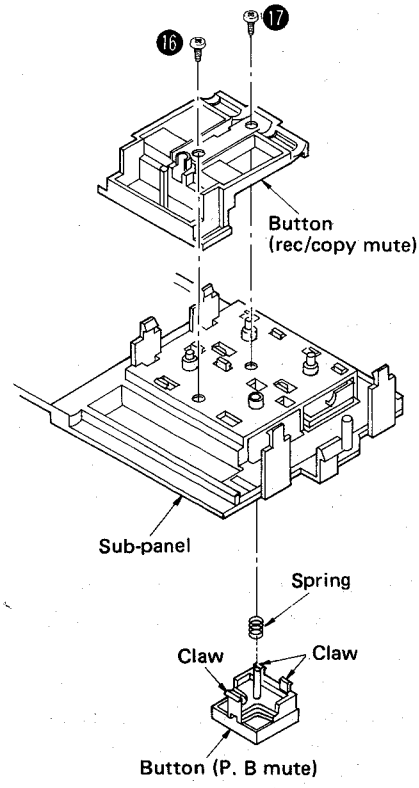


Fig. 5

• How to remove buttons (rec/copy mute, peak hold, indicator, PB mute, copy)

1. Remove the cabinet and front panel.
2. Remove the sub-panel, and the 2 setscrews **(Fig. 5 : ⑯, ⑰)** of rec/copy mute button, getting across from the back.
3. Release the claws of each button and remove the button. **(See Fig. 5.)**

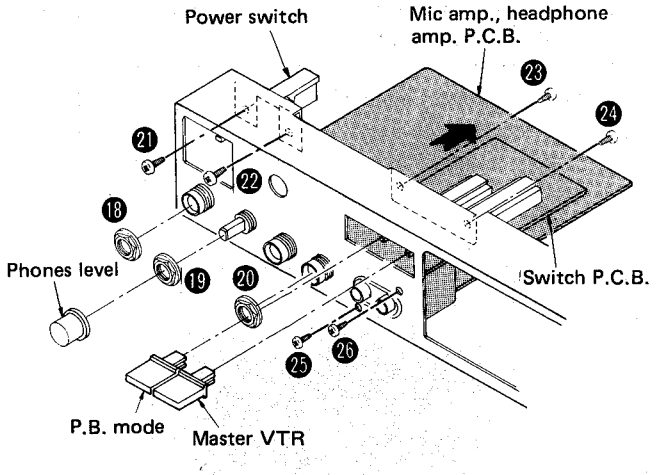


Fig. 6

•. How ro remove mic amp, headphone amp P.C.B. and power switch

1. Remove the cabinet and front panel.
2. Remove the jack and volume nuts **(Fig. 6 : ⑱ ~ ⑳)**.
3. To remove the power switch, remove the setscrews **(Fig. 6 : ㉑, ㉒)**.

• How to remove the switch P.C.B. and video input/output terminals

1. Remove the sub-panel.
2. Remove the 2 buttons and setscrews **(Fig. 6 : ㉓, ㉔)** of the switch board.
3. Remove the 2 setscrews **(Fig. 6 : ㉕, ㉖)** of video input/output terminals.

- **How to remove the main P.C.B.**

1. Remove the cabinet and front panel.
2. Remove the 2 knobs. **(See Fig. 7.)**
3. Remove the 2 volume nuts. **(See Fig. 7.)**

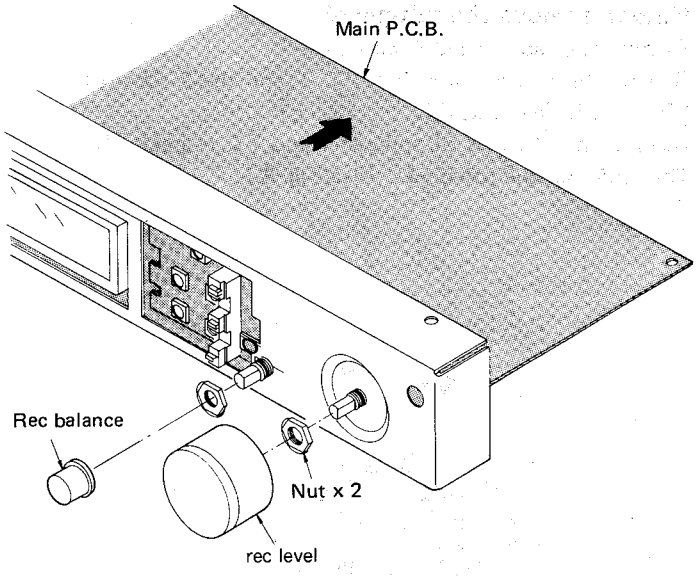


Fig. 7

■ TROUBLE SHOOTING

Check the connection of each instrument and knob position before repair, and use the table below.

Problem	Cause	Solution
No recording with video in rec mode.	* Video cassette lug is broken. * Recording level is low. (When level indicator is not deflected.)	* Cover the hole in the cassette with tape. * Adjust recording level watching the level indicator.
Neither recording nor playback are possible.	* VTR is defective. * The unit is out of order.	* Check VTR and unit with reference to **"Checking by use of a TV set"** given in the following.
Noise is made during playback. **Playback quality is poor.**	* Video cassette tape is defective. * Tracking adjustment is not sufficient. * VTR head area is stained.	* Play another recorded tape. If playback is perfect, the previous tape is defective or recording connections are bad. (It can also be checked by recording a picture on the tape to check for noise.) * Select either "1" or "2" of playback mode. Also, adjust tracking of the VTR used. * Clean the VTR'S video head.
Playback sound is distorted.	* Recording level is too high or low. * Analog circuit is defective.	* Select optimum recording level. * Check analog circuit.

■ CHECKING BY USE OF A TV SET

If recording and playback are not possible or noise is made during playback, it can be checked by using a TV to check whether the cause is in the unit or in video.

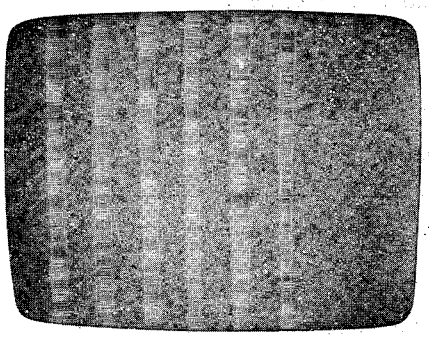
- **Check of VTR**

1. Record a picture on the VTR.
2. Play it on the TV. If the picture is normal, then the VTR is normal.
3. If noise is excessive on the picture, the possible causes are scratches on the tape, insufficient adjustment of tracking, and stains on VTR's head.

Tape is damaged if this kind of picture appears and cannot be corrected using tracking adjustment.

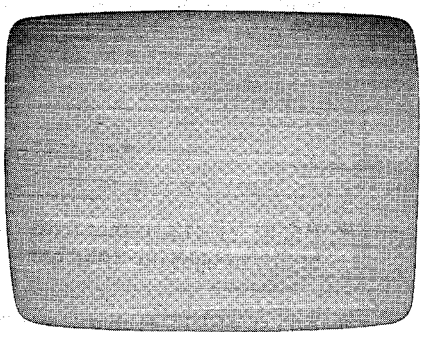
- **Check of the unit**

1. After PCM recording, play the video cassette on a TV.
2. If the picture is like **photo 1**, the tape is PCM-recorded, and normal. If it is like **photo 2**, the tape is not PCM-recorded and blank. The recording system may be defective.
3. If the picture is like **photo 3**, no signal is recorded on the tape. If this picture appears when the level indicator is deflected, the recording system of digital circuit may be defective. If this picture appears when the level indicator is not deflected, the recording system of analog circuit may be defective.
4. Check it by playing the PCM recorded video cassette tape.



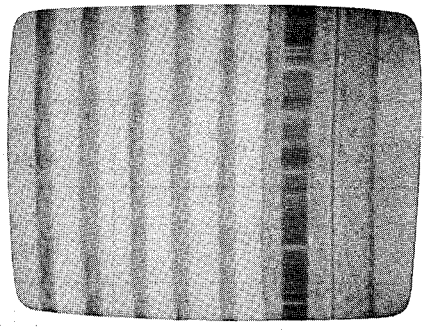
(Photo 1)

Tape is PCM-recorded, and normal. (Normal)



(Photo 2)

Tape is not PCM-recorded, and blank. (No recording)



(Photo 3)

Tape is PCM-recorded but no signal is recorded. (No signal)

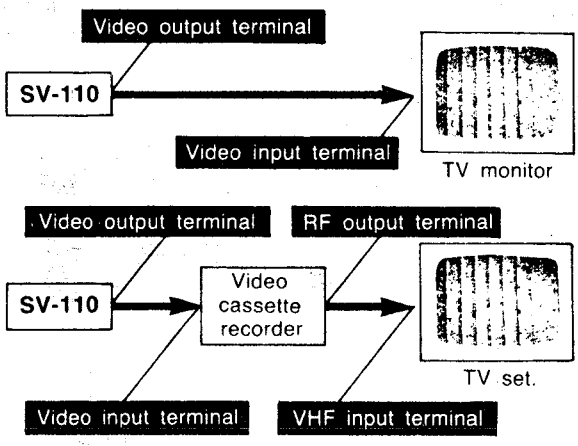
- **To check whether the SV-100 is recording properly:**

There are two connection methods that can be used to check whether this unit is recording signals properly.

[Procedure]

- Use the LINE IN or microphone input for the recording input signal.
- Adjust the recording level control of the SV-110 so the recording/playback level indicators rise and fall. At this time, the television screen should show the pattern shown above if the SV-110 is properly recording the input signal.

[How to connect]



■ ABOUT VIDEO CASSETTES AND RECORDERS

- On the average a typical video cassette tape can be used about 300 times (for recording and playback). If the same tape is used too many times, magnetic surface wear and tape stretch may interfere with normal playback. However, how many times a tape can be used depends on tape quality, VTR used, and the environment.
- Because video playback is seen by the human eye as a continuously moving picture, dropouts are rarely noticeable. However, in PCM recording and playback, dropouts can cause noise because they interfere with correct retrieval of the digital signal information.
  Of course, error correction circuitry and playback muting serve to minimize this problem. But the point is that tape quality is much more important for PCM recording and playback than it is for video.
- Therefore, for PCM recording it is recommended that you use the best quality video cassettes possible and if they are not new they should have been used only a few times.
- Clean the video heads from time to time. Good PCM recordings cannot be made if the heads are dirty.
- For best PCM recording and playback results, it is recommended that you use HG (high grade) VHS video cassettes.
- To avoid accidental erasure, break off the video cassette's safety tab after recording.

■ MEASUREMENTS AND ADJUSTMENT

• Adjustment of display circuit

After repair of display circuit, make the adjustment as follows:

- **Instruments used and setting**

1. AC electronic voltmeter
2. 100 Hz sine-wave oscillator
3. Recording level . . . . . .max.
4. Recording balance . . . . . .center
5. Playback mode switch 1
6. Connect 100 Hz sine-wave oscillator and AC electronic voltmeter to LINE IN.
7. Adjust the oscillator so that the input of LINE IN is 319 mV.

Step	Item	Parts adjusted	Adjusting procedure
1	0 dB	VR213 **(Fig. 8)**	• Adjust VR213 so that 0 dB (B16) of level meter on the right begins to light up. **(Fig. 9)**
2	Balance	VR211 **(Fig. 8)**	• Adjust VR211 so that 0 dB (B16) of level meter on the left begins to light up. **(Fig. 9)**
3	Recovery time	VR212 **(Fig. 8)**	• Instantaneously cut off the input of LINE IN and check the falls of right and left channels of level meter. • If there is a difference between right and left channels, adjust VR212 until no difference.

• Adjustment points

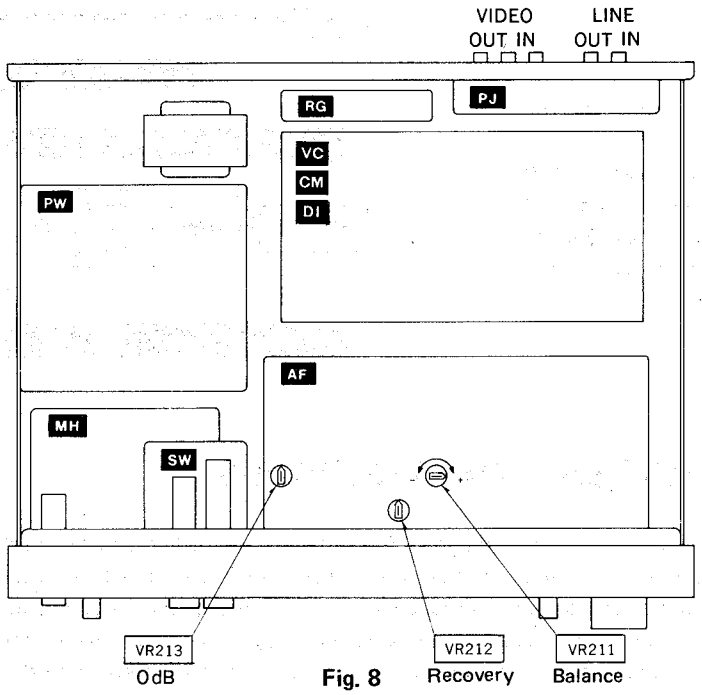


Fig. 8

• Display

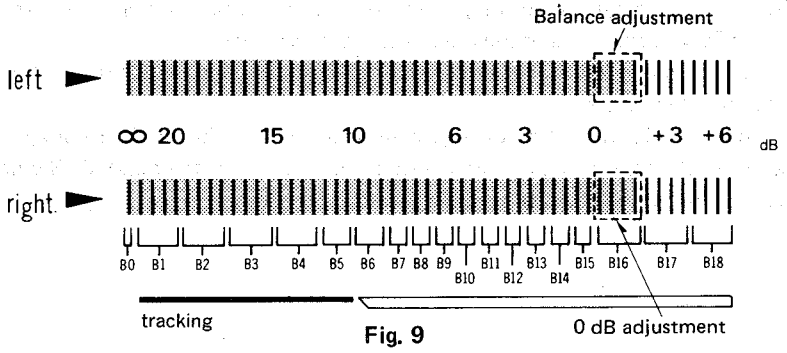

Balance adjustment
left
∞ 20 15 10 6 3 0 +3 +6 dB
right
B0 B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B11 B12 B13 B14 B15 B16 B17 B18
tracking
0 dB adjustment

Fig. 9

■ DISCRIPTION OF EACH TERMINAL OF MN1420PCF

Pin No.	Symbol	Description
1	VSS	Ground terminal
2	CO11	MCK select control terminal INTERNAL . . . . . ."H" AUTO . . . . . ."L"
3	CO10	Vertical synchronizing signal control terminal
4	CO9	PLL frequency dividing signal control terminal
5	CO8	Reset control terminal Reset mode . . . . . ."L" Normal mode . . . . . ."H"
6	CO7	PAL/NTSC select control terminal PAL. . . . . ."H" NTSC. . . . . ."L"
7	CO6	Muting control terminal in cue and review Cue, review . . . . . ."L" Normal mode . . . . . ."H"
8 9	CO5 CO4	} Rec/playback select control terminal Pin No. | 8 | 9 Rec mode | "L" | "H" Play mode | "H" | "L"
10	CO3	Muting circuit, control terminal Muting on . . . . . ."L" Muting off . . . . . ."H"
11	CO2	Display select control terminal Tracking display. . . . . ."H" Level display. . . . . ."L"
12	CO1	Peak hold control terminal Peak hold . . . . . ."H" Normal mode . . . . . ."L"
13	CO0	Display muting control terminal Muting mode . . . . . ."H" Normal mode . . . . . ."L"
14 15 16 17 18	AI3 AI2 AI1 AI0 BI3	Tracking Peak hold Copy Playback muting Record muting } Key scan input
19	BI2	PLL lock detection input terminal Lock mode. . . . . ."L" Free mode . . . . . ."H"

Pin No.	Symbol	Description
20	BI1	Rec/Play checking input terminal Rec mode . . . . . ."L" Play mode . . . . . ."H"
21	BI0	Master VTR select input terminal VTR A . . . . . ."H" VTR B . . . . . ."L"
22 23 24 25	EO0 EO1 EO2 EO3	} System indicator control output terminals
26	TST	Test terminal (not used, connected to ground)
27	RST	Reset terminal (microcomputer is reset at "L".)
28	$\overline{\text{CSLCT}}$	Vertical synchronizing signal frequency dividing (1/4) input terminal.
29	SNS0	122 Hz input terminal
30	SNS1	31.25 kHz input terminal
31	DO0	Copy indicator terminal
32	DO1	Playback muting indicator terminal
33	DO2	Record muting indicator terminal
34	DO3	Video output control terminal Copying mode. . . . . ."H" Normal mode . . . . . ."L"
35	DO4	Playback muting control terminal Playback muting on. . . . ."H" Playback muting off . . . ."L"
36	DO5	Record muting control terminal Record muting on. . . . . ."H" Record muting off . . . . ."L"
37	DO6	Copy muting control terminal Copy muting on. . . . . ."H" Copy muting off . . . . . ."L"
38	DO7	MCK select control terminal INTERNAL . . . . . ."H" AUTO . . . . . ."L"
39	VDD	Power supply (+5V)
40	OSC	Oscillation circuit (clock frequency : 250 kHz)

■ RESISTORS AND CAPACITORS

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. The "Ⓢ" mark is service standard parts and may differ from production parts.
4. The unit of resistance is Ω(ohm). K = 1000Ω , M = 1000kΩ
5. The unit of capacitance is μF (microfarad) P = 10^{-6} μF

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value
ERX	2	AN	J	2R2
Type	Wattage	Shape	Tolerance	Value

Resistor Type		Wattage		Tolerance	
ERD	: Carbon	25	: 1/4W	G	: ± 2%
ERG	: Metal Oxide	1	: 1W	J	: ± 5%
ERO	: Metal Film	S2	: 1/4W	K	: ± 10%
ERQ	: Fuse				

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity
ECEA	50	M	R47	R
Type	Voltage	Reculiarity use	Value	Special use

Capacitor Type		Voltage		Tolerance	
ECEA	: Electrolytic	OJ	: 6.3V	C	: ± 0.25pF
ECEB	: Electrolytic	1A	: 16V	G	: ± 2%
ECEA. . . N	: Non Polar Electrolytic	1C	: 16V	J	: ± 5%
ECCD	: Ceramic	1E	: 25V	K	: ± 10%
ECCR	: Ceramic	25	: 25V	M	: ± 20%
ECKD	: Ceramic	1V	: 35V	P	: +100%, −0%
ECQM	: Polyester	1H	: 50V	Z	: +80%, −20%
ECQP	: Polypropylene	MY	: 125VAC		
ECES	: Electrolytic	ECQP1	: 100V		

● RESISTORS

Ref. No.	Part No.	Value
R101,102 ⚠	ERQ1CJ1R0	1
R104	ERDS2TJ103	10K
R105	ERDS2TJ152	1.5K
R106	ERDS2TJ103	10K
R107,108	ERDS2TJ221	220
R109,110	ERDS2TJ103	10K
R111 Ⓢ	ERGIANJ221	220
R112,113	ERDS2TJ681	680
R114	ERDS2TJ103	10K
R130	ERDS2TJ100	10
R131	ERDS2TJ221	220
R149,150	ERDS2TJ474	470K
R151,152	ERDS2TJ104	100K
R153,154	ER0S2TKG3902	39K
R155,156	ER0S2TKG3601	3.6K
R157,158	ER0S2TKG1102	11K
R159,160	ER0S2TKG2701	2.7K
R161,162	ER0S2TKG2701	2.7K
R163,164	ER0S2TKG2401	2.4K
R165,166	ER0S2TKG2401	2.4K
R167,168	ER0S2TKG3902	39K
R169,170	ER0S2TKG1802	18K
R171,172	ER0S2TKG1602	16K
R173,174	ER0S2TKG3601	3.6K
R175,176	ERDS2TJ333	33K
R177	ERDS2TJ102	1K
R178	ERDS2TJ472	4.7K
R185	ERDS2TJ472	4.7K
R186	ERDS2TJ471	470
R187	ERDS2TJ561	560
R188,189	ERDS2TJ103	10K
R190	ERDS2TJ271	270
R191	ERDS2TJ472	4.7K
R192,193	ERDS2TJ103	10K
R195	ERDS2TJ103	10K
R196	ERDS2TJ472	4.7K
R197	ERDS2TJ332	3.3K
R198	ERDS2TJ471	470
R199	ERDS2TJ472	4.7K
R200	ERDS2TJ102	1K
R201	ERDS2TJ472	4.7K
R202	ERDS2TJ102	1K
R203	ERDS2TJ472	4.7K
R204	ERDS2TJ102	1K
R205	ERDS2TJ102	1K
R206,207	ERDS2TJ271	270
R208	ERDS2TJ102	1K
R209	ERDS2TJ472	4.7K
R210	ERDS2TJ103	10K
R211,212	ER0S2TKG5102	51K
R213	ERDS2TJ333	33K
R214	ER0S2TKG3902	39K
R215,216	ERDS2TJ472	4.7K
R217	ERDS2TJ104	100K
R218	ERDS2TJ474	470K
R219,220	ERDS2TJ433	43K
R221,222	ERDS2TJ682	6.8K
R223,224	ERDS2TJ473	47K
R225	ERDS2TJ473	47K
R226,227	ERDS2TJ223	22K
R228,229	ERDS2TJ472	4.7K
R230	ERDS2TJ472	4.7K
R231	ERDS2TJ474	470K
R232	ERDS2TJ123	12K
R233	ERDS2TJ472	4.7K
R234	ERDS2TJ474	470K
R235	ERDS2TJ103	10K
R236	ERDS2TJ472	4.7K
R237	ERDS2TJ104	100K
R238	ERDS2TJ472	4.7K
R239	ERDS2TJ104	100K
R241	ERDS2TJ104	100K
R242	ERDS2TJ473	47K
R253	ERDS2TJ103	10K
R255,256	ERDS2TJ561	560
R257,258	ERDS2TJ473	47K
R259,260	ERDS2TJ221	220
R261,262	ERDS2TJ332	3.3K
R263,264	ERDS2TJ332	3.3K
R265,266	ERDS2TJ332	3.3K
R267,268	ERDS2TJ223	22K
R269,270	ERDS2TJ221	220
R271,272	ERDS2TJ103	10K
R273,274	ERDS2TJ104	100K
R275	ERDS2TJ102	1K
R276	ERDS2TJ561	560
R281,282	ERDS2TJ104	100K
R283,284	ERDS2TJ123	12K
R285,286	ERDS2TJ123	12K
R287,288	ERDS2TJ223	22K
R289,290	RDS2TJ223	22K
R291,292	ERDS2TJ820	82
R293,294	ERDS2TJ820	82
R301	ERDS2TJ820	82
R302	ERDS2TJ472	4.7K
R303	ERDS2TJ223	22K
R304	ERDS2TJ472	4.7K
R305	ERDS2TJ222	2.2K
R306	ERDS2TJ272	2.7K
R307	ERDS2TJ102	1K
R308	ERDS2TJ102	1K
R309	ERDS2TJ472	4.7K
R310	ERDS2TJ472	4.7K
R311	ERDS2TJ393	39K
R312	ERDS2TJ472	4.7K
R313	ERDS2TJ122	1.2K
R314	ERDS2TJ272	2.7K
R315	ERDS2TJ183	18K
R316	ERDS2TJ472	4.7K
R317	ERDS2TJ153	15K
R318	ERDS2TJ680	68
R319	ERDS2TJ472	4.7K
R320	ERDS2TJ153	15K
R321	ERDS2TJ472	4.7K
R322	ERDS2TJ822	8.2K
R323	ERDS2TJ682	6.8K
R324	ERDS2TJ153	15K
R325	ERDS2TJ223	22K
R326	ERDS2TJ472	4.7K
R327	ERDS2TJ472	4.7K
R328	ERDS2TJ223	22K
R329	ERDS2TJ153	15K
R330	ERDS2TJ153	15K
R331	ERDS2TJ102	1K
R332	ERDS2TJ102	1K
R333	ERDS2TJ273	27K
R334	ERDS2TJ822	8.2K
R335	ERDS2TJ392	3.9K
R336	ERDS2TJ272	2.7K

Ref. No.	Part No.	Value
R337	ERDS2TJ102	1K
R338	ERDS2TJ102	1K
R339	ERDS2TJ102	1K
R340	ERDS2TJ102	1K
R341	ERDS2TJ103	10K
R342	ERDS2TJ103	10K
R343	ERDS2TJ102	1K
R344	ERDS2TJ153	15K
R345	ERDS2TJ153	15K
R346	ERDS2TJ123	12K
R347	ERDS2TJ103	10K
R349	ERDS2TJ102	1K
R350	ERDS2TJ473	47K
R353	ERDS2TJ153	15K
R354	ERDS2TJ103	10K
R355	ERDS2TJ103	10K
R356	ERDS2TJ122	1.2K
R357	ERDS2TJ102	1K
R358	ERDS2TJ122	1.2K
R359	ERDS2TJ152	1.5K
R360	ERDS2TJ153	15K
R361	ERDS2TJ104	100K
R362	ERDS2TJ123	12K
R363	ERDS2TJ103	10K
R364	ERDS2TJ103	10K
R365	ERDS2TJ103	10K
R366	ERDS2TJ103	10K
R367	ER0S2TKG1002	10K
R368	ER0S2TKG1002	10K
R369	ER0S2TKG1002	10K

Ref. No.	Part No.	Value
R370	ER0S2TKG1002	10K
R371	ERDS2TJ221	220
R372	ERDS2TJ221	220
R373	ER0S2TKG1002	10K
R374	ER0S2TKG1002	10K
R375	ER0S2TKG1002	10K
R376	ER0S2TKG1002	10K
R377	ER0S2TKG2002	20K
R378	ER0S2TKG2002	20K
R379	ER0S2TKG2401	2.4K
R380	ER0S2TKG2401	2.4K
R381	ER0S2TKG1302	13K
R382	ER0S2TKG1302	13K
R383	ER0S2TKG1302	13K
R384	ER0S2TKG1302	13K
R385	ER0S2TKG5101	5.1K
R386	ER0S2TKG5101	5.1K
R387	ERDS2TJ221	220
R388	ERDS2TJ332	3.3K
R389	ERDS2TJ332	3.3K
R390	ERDS2TJ102	1K
R391	ERDS2TJ332	3.3K
R392	ERDS2TJ332	3.3K
R393	ERDS2TJ472	4.7K
R394	ERDS2TJ473	47K
R395	ERDS2TJ472	4.7K
R396	ERDS2TJ221	220
R397	ERDS2TJ103	10K
R398	ERDS2TJ472	4.7K
R399	ERDS2TJ472	4.7K
R401 Ⓢ	ERD25FJ102	1K
R402 Ⓢ	ERD25FJ102	1K
R403 Ⓢ	ERD25TJ333	33K

Ref. No.	Part No.	Value
R404 Ⓢ	ERD25TJ333	33K
R405 Ⓢ	ERD25TJ224	220K
R408 Ⓢ	ERD25FJ103	10K
R501	ERDS2TJ393	39K
R502	ERDS2TJ393	39K
R503	ERDS2TJ223	22K
R504	ERDS2TJ103	10K
R505	ERDS2TJ182	1.8K
R506	ERDS2TJ473	47K
R507	ERDS2TJ102	1K
R508	ERDS2TJ102	1K
R509	ERDS2TJ102	1K
R510	ERDS2TJ223	22K
R511	ERDS2TJ223	22K
R512	ERDS2TJ103	10K
R513	ERDS2TJ103	10K
R514	ERDS2TJ123	12K
R515	ERDS2TJ223	22K
R516	ERDS2TJ102	1K
R517	ERDS2TJ562	5.6K
R520	ERDS2TJ473	47K
R521	ER0S2TKG4640	464
R522	ER0S2TKG2800	280
R523	ER0S2TKG6340	634
R524	ER0S2TKG1101	1.1K
R525	ER0S2TKG1000	100
R526	ER0S2TKG2431	2.43K
R527	ERDS2TJ102	1K
R528	ERDS2TJ121	120
R529	ERDS2TJ121	120
R530	ERDS2TJ121	120
R531	ERDS2TJ121	120
R532	ERDS2TJ104	100K

Ref. No.	Part No.	Value
R533	ERDS2TJ104	100K
R534	ERDS2TJ102	1K
R537	ERDS2TJ472	4.7K
R538	ERDS2TJ472	4.7K
R541	ERDS2TJ222	2.2K
R542	ERDS2TJ123	12K
R543	ERDS2TJ102	1K
R545	ERDS2TJ105	1M
R546	ERDS2TJ470	47
R547	ERDS2TJ332	3.3K
R548	ERDS2TJ563	56K
R549	ERDS2TJ332	3.3K
R550	ERDS2TJ563	56K
R551	ERDS2TJ332	3.3K
R552	ERDS2TJ563	56K
R553	ERDS2TJ103	10K
R554	ERDS2TJ473	47K
R555	ERDS2TJ472	4.7K
R557	ERDS2TJ154	150K
R561	ERDS2TJ472	4.7K
R562	ERDS2TJ561	560
R563	ERDS2TJ103	10K
R564	ERDS2TJ473	47K
R565	ERDS2TJ473	47K
R601,602	ERDS2TJ221	220
R631,632	ERDS2TJ472	4.7K
R633,634	ERDS2TJ472	4.7K
R635	ERDS2TJ472	4.7K
R636	ERDS2TJ681	680
R637	ERDS2TJ471	470
R638	ERDS2TJ681	680

● CAPACITORS

Ref. No.	Part No.	Value
C1 ⚠	ECKDMY103PF	0.01
C101,102 Ⓢ	ECKD1H473ZF	0.047
C103 Ⓢ	ECEA1VU332	3300
C104,105 Ⓢ	ECKD1H473ZF	0.047
C106 Ⓢ	ECEA1VU332	3300
C107,108 Ⓢ	ECKD1H473ZF	0.047
C109	ECES1CV223Y	22000
C110 Ⓢ	ECEA1CU331B	330
C111 Ⓢ	ECEA1EU221	220
C112 Ⓢ	ECEA1CU331B	330
C113 Ⓢ	ECEA0JU101	100
C114 Ⓢ	ECEA0JU102B	1000
C120,122 ⚠	ECKDAL102Z-T	0.001
C124,125 ⚠	ECKDMY103PF	0.01
C128 ⚠Ⓢ	ECKD1H473ZF	0.047
C130,131 Ⓢ	ECEA1HUR47	0.47
C132 Ⓢ	ECEA1HUR47	0.47
C151,152 ⚠Ⓢ	ECEA1CN100S	10
C153,154	ECQP1392GZ	0.0039
C155,156 Ⓢ	ECCD1H331K	330P
C157,158 Ⓢ	ECQM1H104JZ	0.1
C159,160	ECQP1122GZ	0.0012
C161,162 Ⓢ	ECCD1H470K	47P
C163,164	ECQP1392GZ	0.0039
C165,166 ⚠Ⓢ	ECEA1CN100S	10
C171,172 Ⓢ	ECEA1CU331B	330
C173,174 Ⓢ	ECEA1HU3R3	3.3
C193 Ⓢ	ECEA0JU470	47
C194 Ⓢ	ECEA0JU471	470
C195,196 Ⓢ	ECKD1H103MD	0.01
C197,198 Ⓢ	ECKD1H103MD	0.01
C199 Ⓢ	ECEA1AU220	22
C211,212 ⚠Ⓢ	ECEA1HN2R2S	2.2
C213,214 Ⓢ	ECEA25M10R	10
C215 Ⓢ	ECEA1HU010	1
C216 Ⓢ	ECEA1CU470	47
C217 Ⓢ	ECQM1H473JZ	0.047
C218	ECEA1EU101	100

Ref. No.	Part No.	Value
C255,256 ⚠Ⓢ	ECEA1CN100S	10
C257,258 Ⓢ	ECCD1H101K	100P
C259,260 Ⓢ	ECKD1H103MD	0.01
C261,262 Ⓢ	ECEA0JU101	100
C263,264 Ⓢ	ECCD1H101K	100P
C265,266 ⚠ Ⓢ	ECEA1CN100S	10
C267 Ⓢ	ECEA1CU331B	330
C268,269 Ⓢ	ECEA1CU221	220
C270 Ⓢ	ECEA1CU221	220
C281,282 Ⓢ	ECCD1H101K	100P
C283,284 Ⓢ	ECCD1H101K	100P
C285,286 ⚠ Ⓢ	ECEA1HN010S	1
C287 ⚠ Ⓢ	ECEA1CN100S	10
C301 Ⓢ	ECEA1CU220	22
C302 Ⓢ	ECEA1CU220	22
C303 Ⓢ	ECEA1CU220	22
C304 Ⓢ	ECCD1H470K	47P
C305 Ⓢ	ECEA1HU2R2	2.2
C306 Ⓢ	ECCD1H181K	180P
C307 Ⓢ	ECQM1H122JZ	0.0012
C308 Ⓢ	ECCD1H561K	560P
C309 Ⓢ	ECCD1H101K	100P
C310 ⚠ Ⓢ	ECEA1HN010S	1
C312 Ⓢ	ECQM1H332JZ	0.0033
C313 Ⓢ	ECEA0JU330	33
C314 Ⓢ	ECEA1EU4R7	4.7
C320 Ⓢ	ECQM1H103JZ	0.01
C321 Ⓢ	ECKD1H473ZF	0.047
C322 Ⓢ	ECKD1H473ZF	0.047
C324 Ⓢ	ECKD1H473ZF	0.047
C325 Ⓢ	ECKD1H473ZF	0.047
C336	ECCD1H681J	680P
C364 Ⓢ	ECCD1H101K	100P
C365 ⚠ Ⓢ	ECEA1CN101S	100
C366 ⚠ Ⓢ	ECEA1CN101S	100
C367 Ⓢ	ECCD1H471K	470P
C368 Ⓢ	ECCD1H471K	470P
C369 Ⓢ	ECCD1H151K	150P
C370 Ⓢ	ECCD1H151K	150P

Ref. No.	Part No.	Value
C371	ECQP1102GZ	0.001
C372	ECQP1102GZ	0.001
C373 Ⓢ	ECCD1H471K	470P
C374 Ⓢ	ECCD1H471K	470P
C375 Ⓢ	ECCD1H820K	82P
C376 Ⓢ	ECCD1H820K	82P
C377	ECQP1392GZ	0.0039
C378	ECQP1392GZ	0.0039
C379 Ⓢ	ECCD1H220K	22P
C380 Ⓢ	ECEA1CU101	100
C381 Ⓢ	ECEA1CU101	100
C382 Ⓢ	ECEA0JU331	330
C383 Ⓢ	ECEA1AU221	220
C384 Ⓢ	ECEA0JU331	330
C385 Ⓢ	ECKD1H473ZF	0.047
C388 Ⓢ	ECEA1EU470	47
C389 Ⓢ	ECEA1EU470	47
C390 Ⓢ	ECEA0JU331	330
C391 Ⓢ	ECEA0JU331	330
C401 Ⓢ	ECKD1H473ZF	0.047
C402 Ⓢ	ECKD1H102KB	0.001
C403 Ⓢ	ECKD1H102KB	0.001
C404 Ⓢ	ECKD1H473ZF	0.047
C405 Ⓢ	ECKD1H473ZF	0.047
C406 Ⓢ	ECKD1H473ZF	0.047
C407 Ⓢ	ECCD1H470K	47P
C408 Ⓢ	ECCD1H470K	47P
C409 Ⓢ	ECKD1H473ZF	0.047
C410 Ⓢ	ECKD1H473ZF	0.047
C411 Ⓢ	ECKD1H473ZF	0.047
C412 Ⓢ	ECEB0JS102	1000
C414 Ⓢ	ECCD1H391KZ	390P
C501 Ⓢ	ECQM1H103JZ	0.01
C502 Ⓢ	ECEA1EU3R3	3.3
C503 Ⓢ	ECQM1H102JZ	0.001
C504 Ⓢ	ECQM1H102JZ	0.001
C505 Ⓢ	ECQM1H103JZ	0.01

Ref. No.	Part No.	Value
C506 Ⓢ	ECCD1H101K	100P
C507 Ⓢ	ECCD1H101K	100P
C508 Ⓢ	ECQM1H104JZ	0.1
C509 Ⓢ	ECQM1H104JZ	0.1
C510 Ⓢ	ECQM1H104JZ	0.1
C511 Ⓢ	ECQM1H104JZ	0.1
C514 Ⓢ	ECKD1H473ZF	0.047
C515 Ⓢ	ECEA0JU101	100
C516 Ⓢ	ECEA0JU471	470
C517 Ⓢ	ECKD1H473ZF	0.047
C518 Ⓢ	ECEA0JU471	470
C519 Ⓢ	ECKD1H473ZF	0.047
C520 Ⓢ	ECEA1HU010	1
C523 Ⓢ	ECKD1H473ZF	0.047
C524 Ⓢ	ECEA0JU221	220
C525 Ⓢ	ECKD1H473ZF	0.047
C526 Ⓢ	ECKD1H473ZF	0.047
C527,528 Ⓢ	ECKD1H473ZF	0.047
C531 Ⓢ	ECEA0JU471	470
C532 Ⓢ	ECEA0JU471	470
C541 Ⓢ	ECQM1H103JZ	0.01
C542 Ⓢ	ECEA1CU100	10
C543 Ⓢ	ECKD1H104ZF	0.1
C544 Ⓢ	ECKD1H104ZF	0.1
C546 Ⓢ	ECCD1H680K	68P
C547 Ⓢ	ECCD1H070CC	7P
C548 Ⓢ	ECCD1H070CC	7P
C549 Ⓢ	ECCD1H070CC	7P
C550 Ⓢ	ECCD1H070CC	7P
C551 Ⓢ	ECQM1H102JZ	0.001
C552 Ⓢ	ECQM1H272JZ	0.0027
C554 Ⓢ	ECEA1CU100	10
C555 Ⓢ	ECQM1H223JZ	0.022
C557	ECQP1123JZ	0.012
C601,602 ⚠ Ⓢ	ECEA1CN100S	10
C603,604 Ⓢ	ECQM1H332JZ	0.0033
C641 ⚠ Ⓢ	ECEA1CN100S	10

■ REPLACEMENT PARTS LIST

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
4. The "Ⓢ" mark is service standard parts and may differ from production parts.
5. The perenthesized numbers in column of description stand for the quality per set.

Areas

* [M] is available in U.S.A.
* [MC] is available in Canada.

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC101	AN78M20	Regulator,+20V
IC102	AN78M05	Regulator,+5V
IC130	AN78M15	Regulator,+15V
IC131	AN78M12	Regulator,+12V
IC132	AN7805	Regulator,+5V
IC151,153,154	SVINJ4559DDM	Pri-emphasis, Buffer
IC155,156	MN6631	Analog Switch
IC191	MN1420PCF	Micro Computer
IC192	MN4001B	NOR Gate
IC193	MN4040B	12-Bit Binaly Counter
IC194	MN4013B	D Flip Flop
IC211,212	AN6552F	Buffer
IC213	SVIUPD4066BC	Quad Bilateral Switch
IC214	AN6870N	Display Drive
IC255	SVINJ4559DDM	Microphone Amprifier
IC281,282	SVINJM4556S	Head-phone Amprifier
IC302	DN74LS123	Multivibrator
IC303	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC305	DN74LS00 or SVIHD74LS00P	NAND Gate
IC308,309	SVITL082CP	Operational Amp.
IC310	AN6552F	Comparator
IC311	AN6914	Comparator
IC312,313	SVITL810CP	Operational Amp.
IC365,366	SVITL082CP	Operational Amp.
IC367,368	SVIUPD4066BC	Quad Bilateral Switch
IC369	SVITL082CP	Operational Amp.
IC370,371	SVIUPD4066BC	Quad Bilateral Switch
IC372	DN74LS126A or SVIHD74LS126	Buffer
IC373,374	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC375	EHKMA6196	D-A/A-D Converter
IC377,378	SVITL082CP	Operational Amp.
IC379	DN74LS02	NOR Gate
IC401	MN6603	REC/PB Control
IC402,404	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC403	DN74LS04	Inverter
IC405	DN74LS125A or SVIHD74LS125	Buffer Gate
IC406	DN74LS123	Multivibrator
IC407	DN74LS86 or SVIHD74LS86P	Exclusive OR Gate
IC408	MN6602	PB Control
IC409	MN6601	REC Control
IC410,411	SVIHM6116P-4	Randam Access Memory
IC412	DN74LS161A or SVIHD74LS161	4-Bit Binary Counter
IC413	DN74LS74A or SVIHD74LS74P	D Flip Flop

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC414	DN74LS02	NOR Gate
IC415	DN74LS161A or SVIHD74LS161	4-Bit Binary Counter
IC416	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC417,418	SVIHM6116P-4	Randam Access Memory
IC420	DN74LS123	Multivibrator
IC421	DN74LS126A or SVIHD74LS126	Buffer
IC501	DN74LS02	NOR Gate
IC502	DN74LS123	Multivibrator
IC503	DN74LS00 or SVIHD74LS00P	NAND Gate
IC504,505	DN74LS123	Multivibrator
IC506	DN74LS02	NOR Gate
IC507	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC508	DN74LS00 or SVIHD74LS00P	NAND Gate
IC509	MN1542PCK	Micro Computer
IC510	DN74LS157	Multiplexer
IC511	SVISN74LS393	4Bit Binary Counter
IC512	SVITL082CP	Operational Amp.
IC513	SVIUPD4066BC	Quad Bilateral Switch
IC514	SVITC40H004P	Inverter
IC515	SVITL082CP	Operational Amp.
IC516	SVINJ4559DDM	Operational Amp.
IC517~520	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC521	DN74LS00 or SVIHD74LS00P	NAND Gate
IC522	DN74LS126A or SVIHD74LS126	Buffer
IC524	DN74LS04	Inverter
TRANSISTORS		
Q101,102	2SD636	Muting Circuit
Q103	2SB641	Muting Circuit
Q104	2SD636	Muting Circuit
Q105	2SB641	Muting Circuit
Q151	2SD636	L.E.D.Drive
Q191	2SB641	Switching
Q192,193	2SD636	Switching
Q194,195	2SD636	Switching
Q211,212	2SD636	Buffer
Q213,214	2SD636	Buffer
Q215	2SD636	Buffer
Q216	2SB641	Switching
Q217	2SD636	Switching
Q218	2SB641	Switching
Q255,256	2SC2385-G	Microphone Amprifier
Q257,258	2SC2385-G	Microphone Amprifier
Q301	2SC2377	Buffer
Q302,303	2SD636	Input Amp.
Q304	2SC2377	Input Amp.

Ref. No.	Part No.	Description
TRANSISTORS		
Q305,306	2SD636	Input Amp. & CSYNC Spearator
Q307,308	2SB641	C SYNC Separator
Q309	2SD636	Switching
Q310	2SB641	FET Driver
Q311	2SK301	Switching
Q313	2SD636	Switching
Q365	2SD636	Switching
Q501,502	2SD636	Video Amp.
Q503	2SB641	Video Amp.
Q504	2SD636	Video Amp.
Q505,506	2SB641	Video Amp. & Switching
Q507,508	2SB641	Switching
Q510	2SB641	Switching
DIODES		
D101,102 ⚠	SVDS1WB10	Rectifier
D103 ⚠	SVDS4VB10	Rectifier
D104	MA4075	7.5V,Zener
D105	MA4056	5.6V,Zener
D106,107 Ⓢ	MA162A	Switching
D151	MA165	Switching
D191	MA165	Switching
D193	MA165	Switching
D211,212	MA165	Switching
D213	MA4068	6.8V,Zener
D214,215 Ⓢ	MA26TO-A	Switching
D216,217	MA165	Switching
D255	MA165	Switching
D301,302	MA165	Switching
D303,304	MA165	Switching
D305,306	MA165	Switching
D307,308	MA165	Switching
D365,366	MA165	Switching
D367	MA4051	5.1V,Zener
D501 Ⓢ	MA26TO-A	Switching
D502	SVDKV1236Z	Variable Capactitor Diode
D503	MA165	Switching
D611,612	LN0401GP3	System Indicator
D613,614	SVDLD-101MG	System Indicator
D631,633	LN229RP	REC/COPY Indicator
D632	LN329GP	PBMUTE Indicator
OSCILLATORS		
X401	SVQ43U1586	Crystal,15.86MHz
X501,502	EF0A4R0M01A	Ceramic,4MHz
COILS and TRANSFORMERS		
L120	ELF18D112	Line Filter
L301	ELB5F7	Low Pass Filter
L302	ELB5G038	Delay Line
L501,502	SLQ0930T300C	Balun Coil
L503~506	ELEH100JA	Choke
LPF151,152	EULBPF304	Low Pass Filter
T1 ⚠	SLTF6244	Power Source

Ref. No.	Part No.	Description
VARIABLE RESISTORS		
VR151	EWGGDA510375	Recording Balance
VR152	EWJKDA016A15	Recording Level
VR211	EVN38CA00B24	Balance Adjustment 20kΩ(B)
VR212	EVN38CA00B16	Recovery Time Adjustment 100kΩ(B)
VR213	EVN38CA00B14	0dB Adjustment 10kΩ(B)

Ref. No.	Part No.	Description
VARIABLE RESISTORS		
VR255	EWCSNAF15AF5	Head Phone Level
VR365,366	EVN38CA00B24	Offset Adjustment 20kΩ(B)
VR501	EVN38CA00B53	5kΩ(B)
VR502,503	EVN38CA00B14	10kΩ(B)
VR504	EVMG0GA01B54	50kΩ(B)
FLUORESCENT DISPLAY TUBE		
FL201	SSDQBG193Z	Level/Tracking Indication
RELAY		
RLY151,260	SFDYQ11N02	Muting

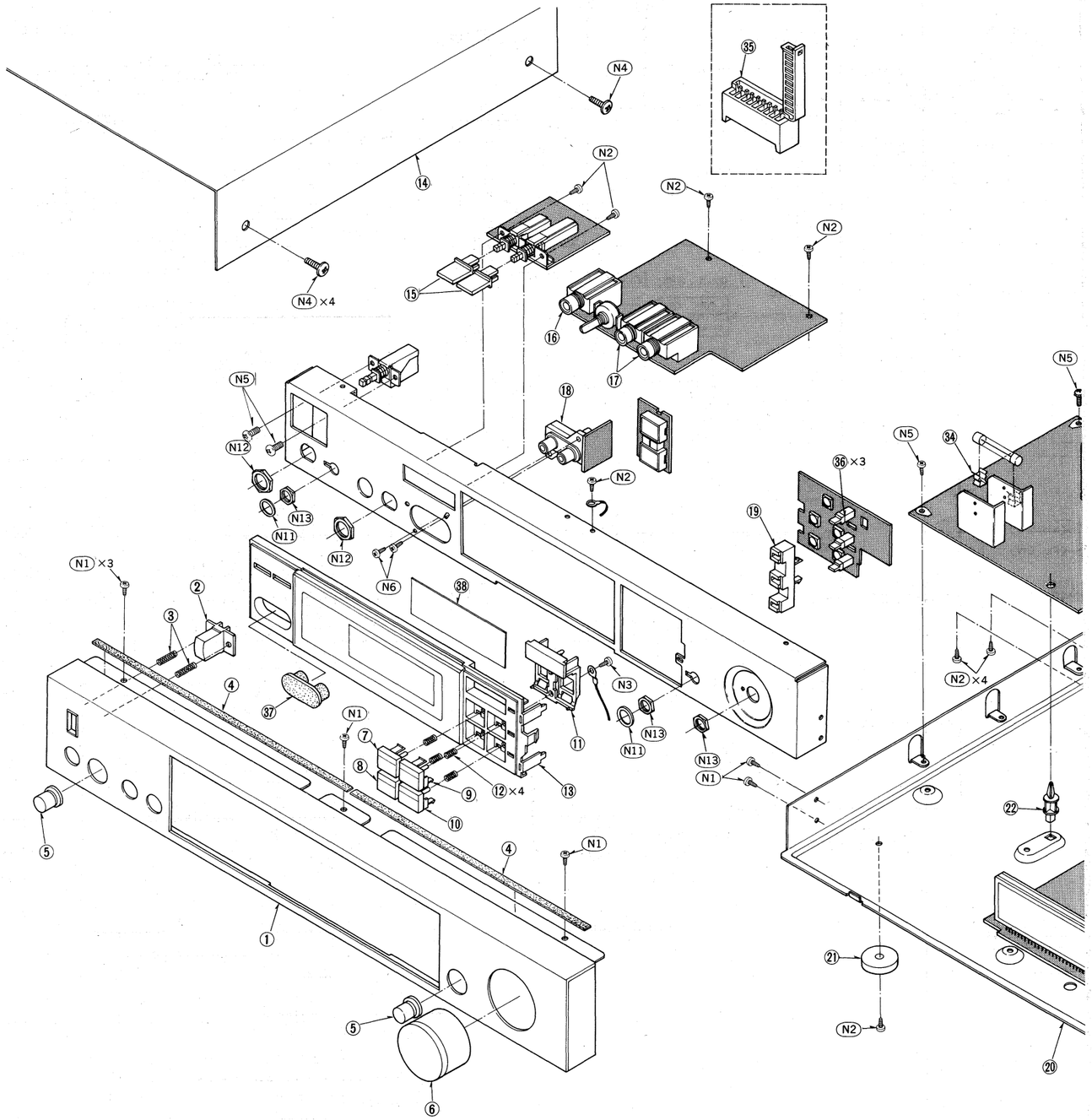
Ref. No.	Part No.	Description
SWITCHES		
S1 ⚠	ESB8213V	Power Switch
S621	SSDS2K4KB1X	Master Switch, Playback Mode Switch
S631	EVQQJ104K	Recording Muting
S632	EVQQJ104K	Peak Hold
S633	EVQQJ104K	Tracking
S634	EVQQJ104K	Copy
S635	EVQQJ104K	Playback Muting
FUSE		
F120 ⚠	XBA1F10NU14	1A,125V

Ref. No.	Part No.	Description
CABINET AND CHASSIS PARTS		
1	SSBP110N01E	Front Panel,with Power Switch Button (1)
2	SBC261-1	Button,Power Switch (1)
3	SUS193	Spring,Power Switch Button (2)
4	SSUZ110N03	Sheet (2)
5	SBN947-1	Knob,Recording Balance/Phones Level (2)
6	SBN943-1	Knob,Recording Level (1)
7	SSKT110N07	Button,Peak Hold (1)
8	SSKT110N09	Button,Tracking (1)
9	SSKT110N08	Button,PB Mute (1)
10	SSKT110N10	Button,Copy (1)
11	SSKT110N02	Button,REC Mute (1)
12	SSQA110N01	Spring,Buttons (4)
13	SSUM110N01E	Sub Panel (1)
14	SSUP110N03	Cabinet (1)
15	SBC315-4	Button,PB Mode/Master VTR Selector (2)
16	SSDJ3315020	Jack,Head Phone (1)
17	SSDJ3315010	Jack,Microphone (2)
18	SJF3225N	Terminal Plate,Video Input/Output (1)
19	SSUM110N02	Holder,L.E.D. (1)
20	SSUP110N01	Bottom Board (1)
21	SKL117-1	Foot (4)
22	SSUM110N03	Spacer,P.C.B. (2)
23	SFDBC07-01	Bushing,Regulator IC (3)
24	SFDCC07-01	Insulator, Regulator IC (3)
25	SSUM110N04	Clamper,Lead Wires (2)
26 ⚠	SFDJHSC0491	Jack,AC IN (1)

Ref. No.	Part No.	Description
CABINET AND CHASSIS PARTS		
27	SRNZ010M03	Label,AC IN (1)
28 (M)	SSNN110M01	Name Plate (1)
28 (MC)	SSNN110C01	Name Plate (1)
29	SSUZ101N01	Sheet (1)
30	SJF3059-4N	Terminal Plate, Line Input/Output, Video Input/Output, Monitor Output (1)
31	SSUM101N08	Latch,P.C.B. (2)
32	SSUM110N08	Bracket (1)
34	SJT345	Holder,Fuse (2)
35	SFDJW-D0603	Connector(3pin) (2)
35	SFDJW-D0605	Connector(5pin) (1)
35	SFDJW-D0606	Connector(6pin) (1)
36	SSGZ110N01	Spacer,L.E.D. (3)
37	SSGK110N11	Cap,Video Input/Output Terminal (1)
38	SSKK110N02	Filter (1)
39	SSDC110N01	Sheet. (1)
SCREWS,WASHERS AND NUTS		
N1 Ⓢ	XTN3+6B	Screw,Front Panel (7)
N2 Ⓢ	XTV3+6BFZ	Screw,P.C.Board, Power Transformer, Foot (17)
N3 Ⓢ	XTV3+6BFZ	Screw,Rec Mute Button (1)
N4 Ⓢ	XTB4+8BFN	Screw,Cabinet (4)
N5	SRXG010N12	Screw,Power Switch P.C.Board,Heat Sink,A.C.Socket (7)
N6 Ⓢ	XTV3+8BFZ	Screw,Terminal Plate (4)
N7	XTN3+55J	Screw,P.C.Board (2)

Ref. No.	Part No.	Description
SCREWS,WASHERS AND NUTS		
N8 Ⓢ	XTV3+6BFN	Screw, P.C.Board (12)
N9 Ⓢ	XTV3+8BFN	Screw,P.C.Board (2)
N10 Ⓢ	XSN3+8S	Screw,Regulator IC (3)
N10 Ⓢ	XWA3B	Washer,Regulator IC (3)
N11	SSXW110N01	Washer,Volume (2)
N12 Ⓢ	XNS12	Nut,Head Phone Jack, Microphone Jack (2)
N13 Ⓢ	XNS8	Nut,Volume (3)
ACCESSORIES		
A1 (M)	SSNU110M01	Instruction Book (1)
A1 (MC)	SSNU110C01E	Instruction Book (1)
A2 (M) ⚠	SFDAC05M01	AC Cord (1)
A2 (MC) ⚠	SRDA010C01	AC Cord (1)
A3	SFDHC05N01	Cord,Line Input/Output (2)
A4	SSDH101N02	Cord,Video Input (2)
PACKING PARTS		
P1 (M)	SSHP110M01	Carton Box (1)
P1 (MC)	SSHP110C01	Carton Box (1)
P2	SSHH110N01E	Pad,Front(Left) (1)
P3	SSHH110N02E	Pad,Front(Right) (1)
P4	SSHH110N03	Pad,Rear(Left) (1)
P5	SSHH110N04	Pad,Rear(Right) (1)
P6	SSHD110N01	Box,Cords (1)
P7	SFYH60×60	Polyethylene Bag,Set (1)
P8	SFYH17×16	Polyethylene Bag,Cords (3)

■ EXPLODED VIEW



Ref. No.	Part No.	Description
VARIABLE RESISTORS		
VR151	EWGGDA510375	Recording Balance
VR152	EWJKDA016A15	Recording Level
VR211	EVN38CA00B24	Balance Adjustment 20kΩ(B)
VR212	EVN38CA00B16	Recovery Time Adjustment 100kΩ(B)
VR213	EVN38CA00B14	0dB Adjustment 10kΩ(B)

Ref. No.	Part No.	Description
VARIABLE RESISTORS		
VR255	EWCSNAF15AF5	Head Phone Level
VR365,366	EVN38CA00B24	Offset Adjustment 20kΩ(B)
VR501	EVN38CA00B53	5kΩ(B)
VR502,503	EVN38CA00B14	10kΩ(B)
VR504	EVMG0GA01B54	50kΩ(B)
FLUORESCENT DISPLAY TUBE		
FL201	SSDQBG193Z	Level/Tracking Indication
RELAY		
RLY151,260	SFDYQ11N02	Muting

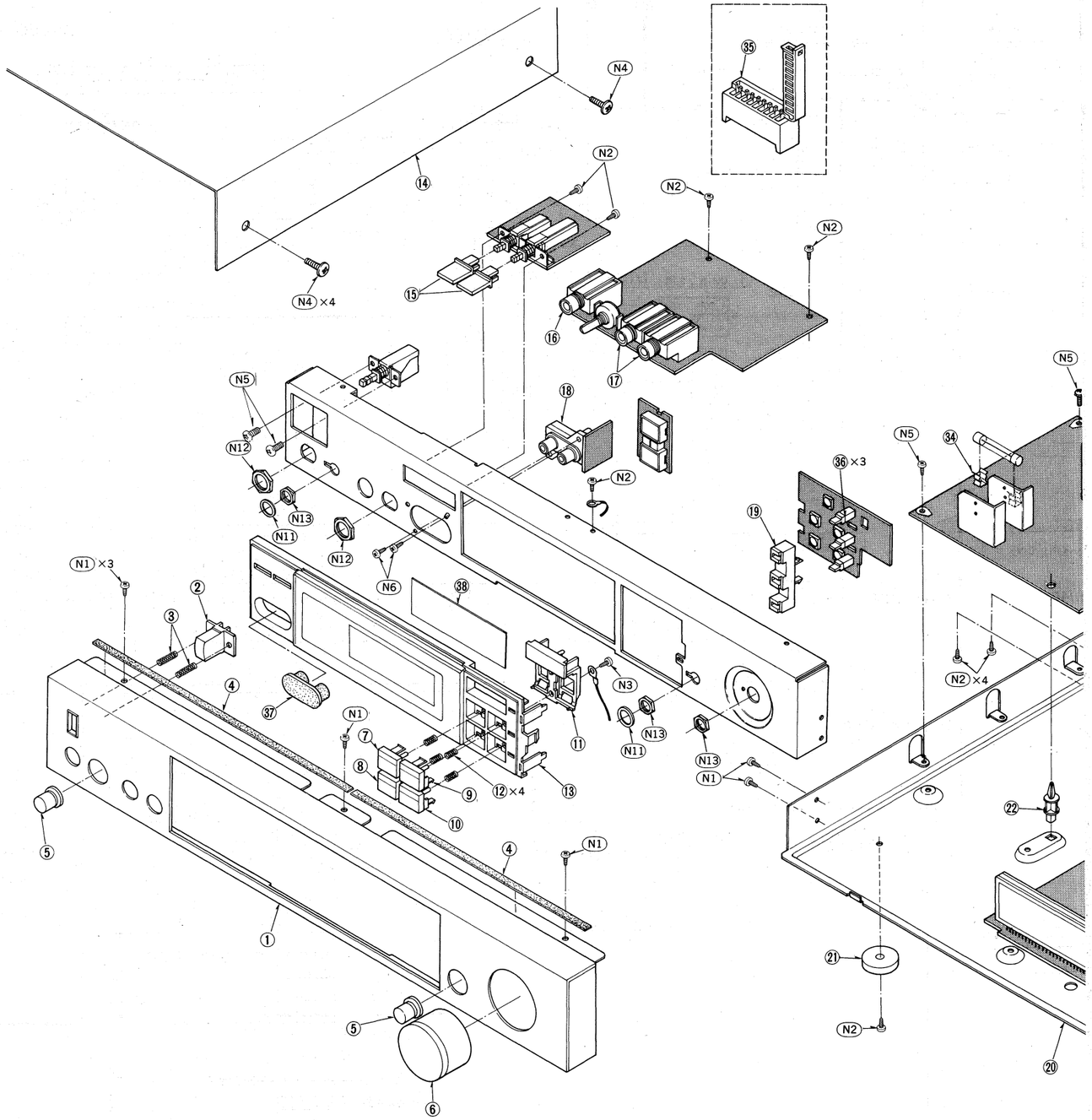
Ref. No.	Part No.	Description
SWITCHES		
S1 ⚠	ESB8213V	Power Switch
S621	SSDS2K4KB1X	Master Switch, Playback Mode Switch
S631	EVQQJ104K	Recording Muting
S632	EVQQJ104K	Peak Hold
S633	EVQQJ104K	Tracking
S634	EVQQJ104K	Copy
S635	EVQQJ104K	Playback Muting
FUSE		
F120 ⚠	XBA1F10NU14	1A,125V

Ref. No.	Part No.	Description
CABINET AND CHASSIS PARTS		
1	SSBP110N01E	Front Panel,with Power Switch Button (1)
2	SBC261-1	Button,Power Switch (1)
3	SUS193	Spring,Power Switch Button (2)
4	SSUZ110N03	Sheet (2)
5	SBN947-1	Knob,Recording Balance/Phones Level (2)
6	SBN943-1	Knob,Recording Level (1)
7	SSKT110N07	Button,Peak Hold (1)
8	SSKT110N09	Button,Tracking (1)
9	SSKT110N08	Button,PB Mute (1)
10	SSKT110N10	Button,Copy (1)
11	SSKT110N02	Button,REC Mute (1)
12	SSQA110N01	Spring,Buttons (4)
13	SSUM110N01E	Sub Panel (1)
14	SSUP110N03	Cabinet (1)
15	SBC315-4	Button,PB Mode/Master VTR Selector (2)
16	SSDJ3315020	Jack,Head Phone (1)
17	SSDJ3315010	Jack,Microphone (2)
18	SJF3225N	Terminal Plate,Video Input/Output (1)
19	SSUM110N02	Holder,L.E.D. (1)
20	SSUP110N01	Bottom Board (1)
21	SKL117-1	Foot (4)
22	SSUM110N03	Spacer,P.C.B. (2)
23	SFDBC07-01	Bushing,Regulator IC (3)
24	SFDCC07-01	Insulator, Regulator IC (3)
25	SSUM110N04	Clamper,Lead Wires (2)
26 ⚠	SFDJHSC0491	Jack,AC IN (1)

Ref. No.	Part No.	Description
CABINET AND CHASSIS PARTS		
27	SRNZ010M03	Label,AC IN (1)
28 (M)	SSNN110M01	Name Plate (1)
28 (MC)	SSNN110C01	Name Plate (1)
29	SSUZ101N01	Sheet (1)
30	SJF3059-4N	Terminal Plate, Line Input/Output, Video Input/Output, Monitor Output (1)
31	SSUM101N08	Latch,P.C.B. (2)
32	SSUM110N08	Bracket (1)
34	SJT345	Holder,Fuse (2)
35	SFDJW-D0603	Connector(3pin) (2)
35	SFDJW-D0605	Connector(5pin) (1)
35	SFDJW-D0606	Connector(6pin) (1)
36	SSGZ110N01	Spacer,L.E.D. (3)
37	SSGK110N11	Cap,Video Input/Output Terminal (1)
38	SSKK110N02	Filter (1)
39	SSDC110N01	Sheet. (1)
SCREWS,WASHERS AND NUTS		
N1 Ⓢ	XTN3+6B	Screw,Front Panel (7)
N2 Ⓢ	XTV3+6BFZ	Screw,P.C.Board, Power Transformer, Foot (17)
N3 Ⓢ	XTV3+6BFZ	Screw,Rec Mute Button (1)
N4 Ⓢ	XTB4+8BFN	Screw,Cabinet (4)
N5	SRXG010N12	Screw,Power Switch P.C.Board,Heat Sink,A.C.Socket (7)
N6 Ⓢ	XTV3+8BFZ	Screw,Terminal Plate (4)
N7	XTN3+55J	Screw,P.C.Board (2)

Ref. No.	Part No.	Description
SCREWS,WASHERS AND NUTS		
N8 Ⓢ	XTV3+6BFN	Screw, P.C.Board (12)
N9 Ⓢ	XTV3+8BFN	Screw,P.C.Board (2)
N10 Ⓢ	XSN3+8S	Screw,Regulator IC (3)
N10 Ⓢ	XWA3B	Washer,Regulator IC (3)
N11	SSXW110N01	Washer,Volume (2)
N12 Ⓢ	XNS12	Nut,Head Phone Jack, Microphone Jack (2)
N13 Ⓢ	XNS8	Nut,Volume (3)
ACCESSORIES		
A1 (M)	SSNU110M01	Instruction Book (1)
A1 (MC)	SSNU110C01E	Instruction Book (1)
A2 (M) ⚠	SFDAC05M01	AC Cord (1)
A2 (MC) ⚠	SRDA010C01	AC Cord (1)
A3	SFDHC05N01	Cord,Line Input/Output (2)
A4	SSDH101N02	Cord,Video Input (2)
PACKING PARTS		
P1 (M)	SSHP110M01	Carton Box (1)
P1 (MC)	SSHP110C01	Carton Box (1)
P2	SSHH110N01E	Pad,Front(Left) (1)
P3	SSHH110N02E	Pad,Front(Right) (1)
P4	SSHH110N03	Pad,Rear(Left) (1)
P5	SSHH110N04	Pad,Rear(Right) (1)
P6	SSHD110N01	Box,Cords (1)
P7	SFYH60×60	Polyethylene Bag,Set (1)
P8	SFYH17×16	Polyethylene Bag,Cords (3)

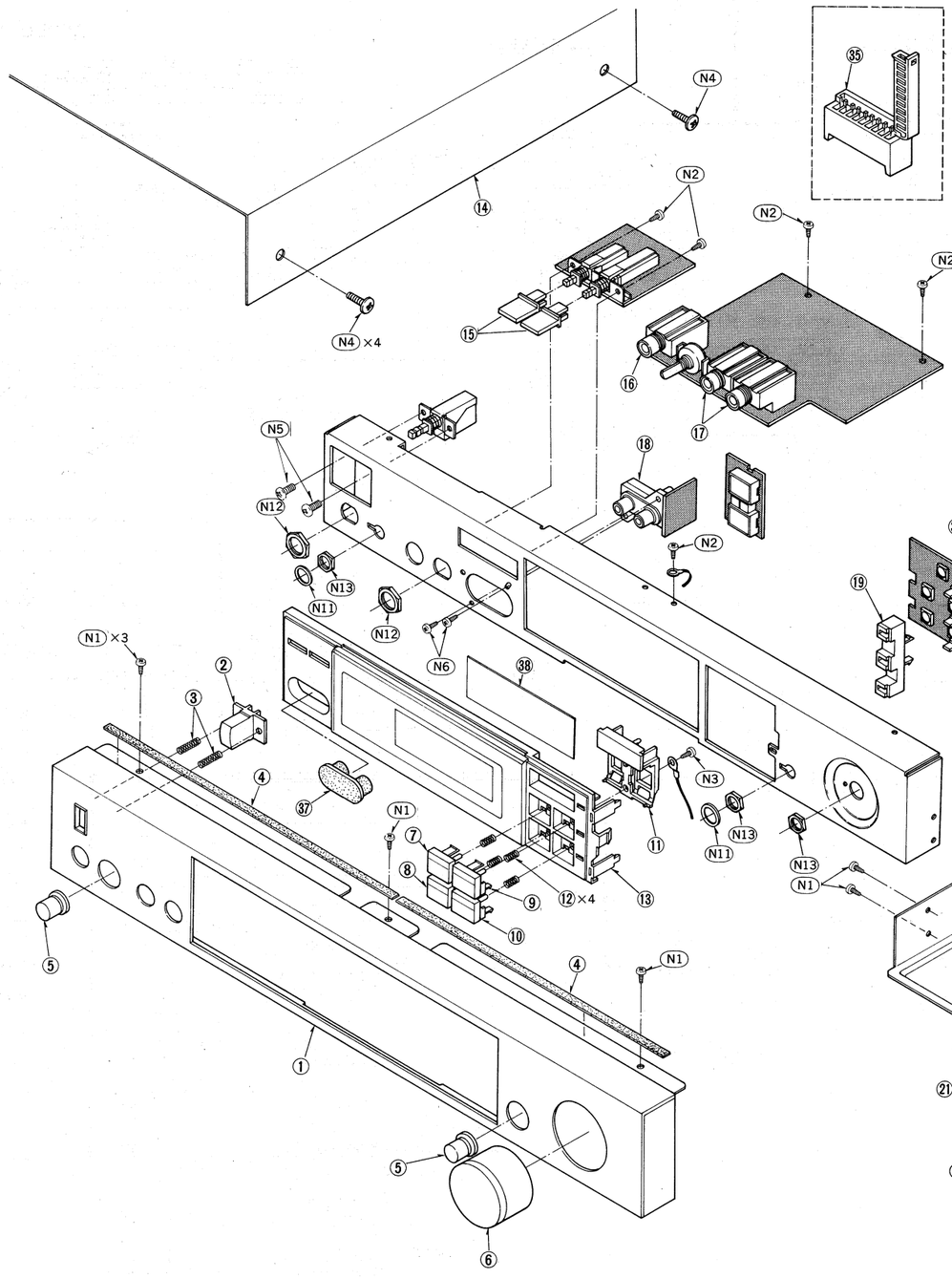
■ EXPLODED VIEW

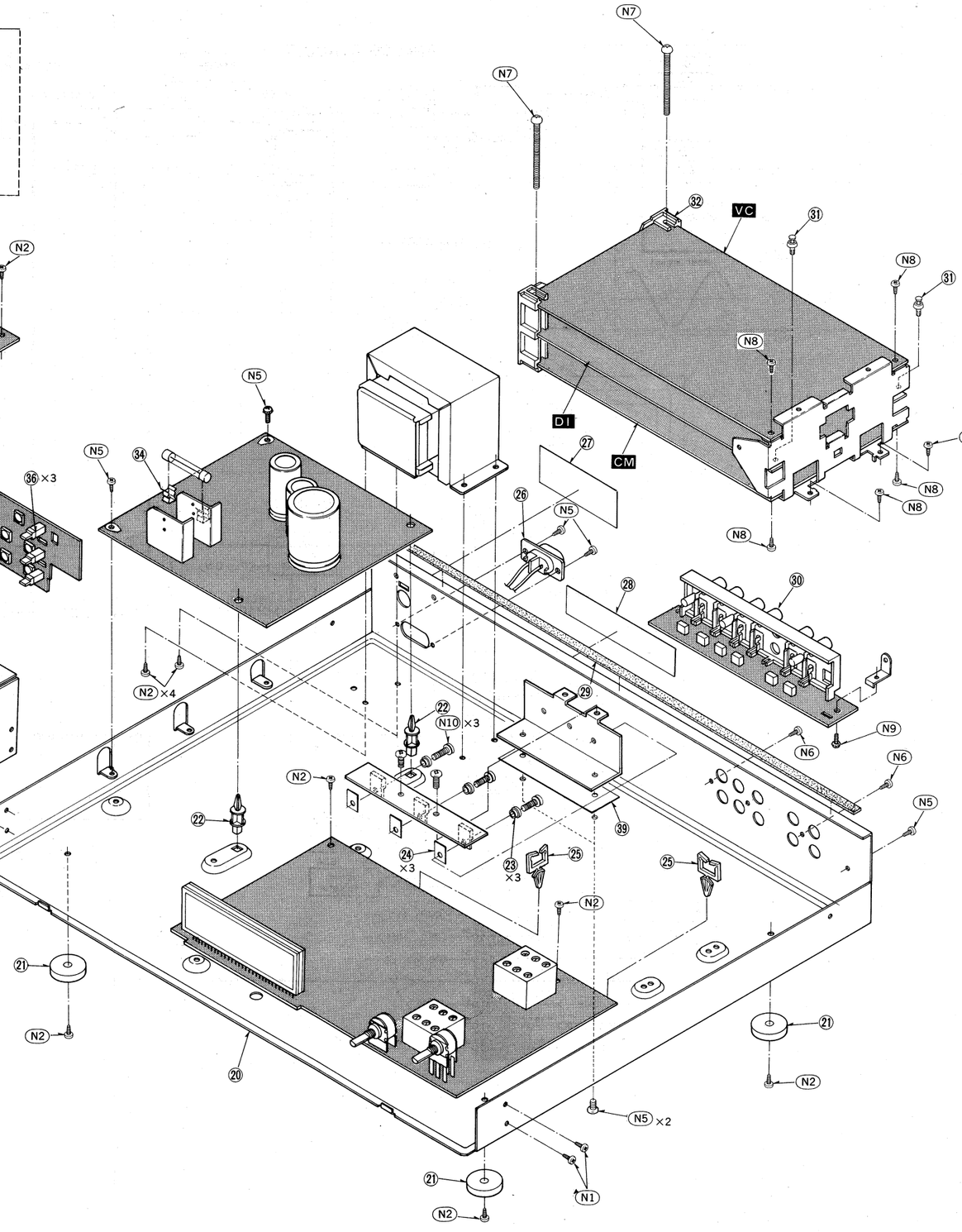


Part No.	Description
8213V	Power Switch
S2K4KB1X	Master Switch, Playback Mode Switch
QJ104K	Recording Muting
QJ104K	Peak Hold
QJ104K	Tracking
QJ104K	Copy
QJ104K	Playback Muting
1F10NU14	1A,125V

	Description	
AND NUTS		
	Screw, P.C.Board	(12)
	Screw,P.C.Board	(2)
	Screw,Regulator IC	(3)
	Washer,Regulator IC	(3)
1	Washer,Volume	(2)
	Nut,Head Phone Jack, Microphone Jack	(2)
	Nut,Volume	(3)
01	Instruction Book	(1)
1E	Instruction Book	(1)
01	AC Cord	(1)
1	AC Cord	(1)
01	Cord,Line Input/Output	(2)
2	Cord,Video Input	(2)
01	Carton Box	(1)
1	Carton Box	(1)
1E	Pad,Front(Left)	(1)
2E	Pad,Front(Right)	(1)
3	Pad,Rear(Left)	(1)
4	Pad,Rear(Right)	(1)
01	Box,Cords	(1)
0	Polyethylene Bag,Set	(1)
6	Polyethylene Bag,Cords	(3)

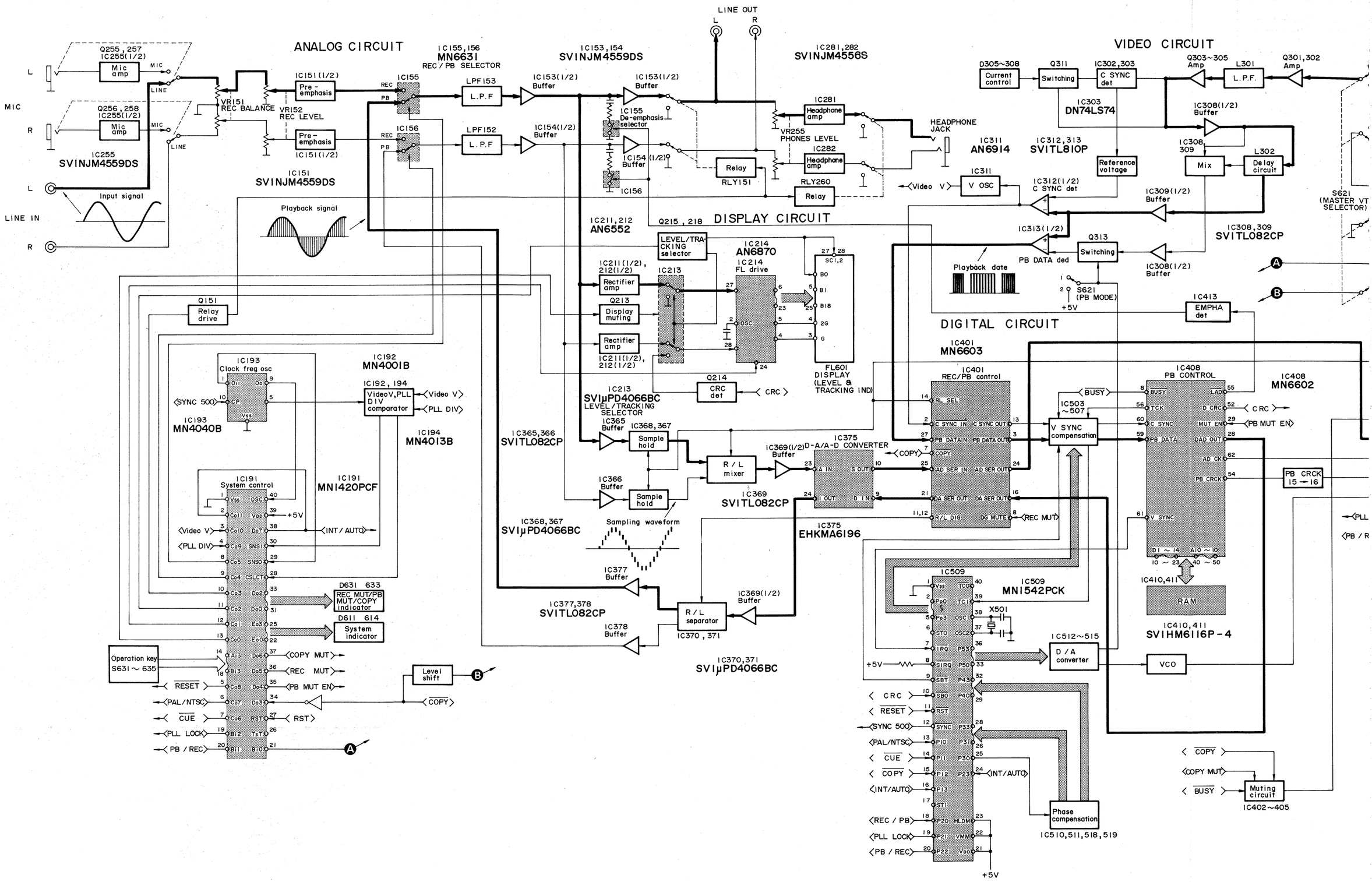
■ EXPLODED VIEW





SV-110 SV-110

■ BLOCK DIAGRAM



LINE OUT L R

IC155,156 MN6631 REC / PB SELECTOR

IC153,154 SVINJM4559DS

IC281,282 SVINJM4556S

LPF153 L.P.F

IC153(1/2) Buffer

LPF152 L.P.F

IC154(1/2) Buffer

IC155 De-emphasis selector

IC154 (1/2) Buffer

IC156

Relay RLY151

RLY260 Relay

IC281 Headphone amp

IC282 Headphone amp

VR255 PHONES LEVEL

HEADPHONE JACK

IC311 AN6914

IC312,313 SVITL810P

VIDEO CIRCUIT

D305~308 Current control

Q311 Switching

IC302,303 C SYNC det

Q303~305 Amp

L301 L.P.F.

Q301,302 Amp

IC303 DN74LS74

IC308(1/2) Buffer

IC308, 309 Mix

L302 Delay circuit

Reference voltage

VIDEO IN

Video playback signal

MONITOR

S621 (MASTER VTR SELECTOR)

Video V

V OSC

IC312(1/2) C SYNC det

IC309(1/2) Buffer

IC313(1/2) PB DATA ded

Q313 Switching

IC308,309 SVITL082CP

Playback date

S621 (PB MODE)

+5V

IC308(1/2) Buffer

IC413 EMPHA det

IC211,212 AN6552

Q215 , 218 DISPLAY CIRCUIT

LEVEL/TRACKING selector

IC214 AN6870

IC214 FL drive

IC211(1/2), 212(1/2) Rectifier amp

IC213

Q213 Display muting

Rectifier amp

IC211(1/2), 212(1/2)

SC1,2 B0 B1 B18 2G G

FL601 DISPLAY (LEVEL & TRACKING IND)

Q214 CRC det

CRC

IC213 SVIμPD4066BC LEVEL/TRACKING SELECTOR

DIGITAL CIRCUIT

IC401 MN6603

IC401 REC/PB control

IC408 PB CONTROL

IC408 MN6602

IC409 MN6601

IC409 REC control

Q506 , 507 Muting

IC522 Video mixing

Q501 ~ 505 Video amp

IC522 DN74LS126

VIDEO OUT

Video recording signal

IC365,366 SVITL082CP

IC365 Buffer

IC368,367 Sample hold

IC366 Buffer

Sample hold

IC368,367 SVIμPD4066BC

Sampling waveform

IC377 Buffer

IC375 EHKMA6196

IC369(1/2) D-A/A-D CONVERTER

IC369 SVITL082CP

R / L mixer

IC369(1/2) Buffer

IC377,378 SVITL082CP

R / L separator

IC370 , 371

IC378 Buffer

IC370,371 SVIμPD4066BC

BUSY

IC503 ~507 V SYNC compensation

CRC

PB MUT EN

PB CRCK 15 — 16

IC509 MN1542PCK

X501

IC512~515 D / A converter

VCO

IC410,411 RAM

IC410,411 SVIHM6116P-4

IC417,418 SVIHM6116P-4

IC417,418 RAM

X401

PLL DIV

PB / REC

REC/PB

INT / AUTO

COPY

COPY MUT

BUSY

Muting circuit

IC402~405

RESET

SYNC 500

PAL/NTSC

CUE

COPY

INT/AUTO

REC / PB

PLL LOCK

PB / REC

Phase compensation

IC510,511,518,519

POWER SOURCE CIRCUIT

IC131 Regulator +12V

IC101 Regulator +20V

D101 Rectifier

IC132 Regulator +5V

IC102 Regulator +5V

D103 Rectifier

T1 Power transformer

S1 POWER

AC LINE

IC130 Regulator -15V

D102 Rectifier

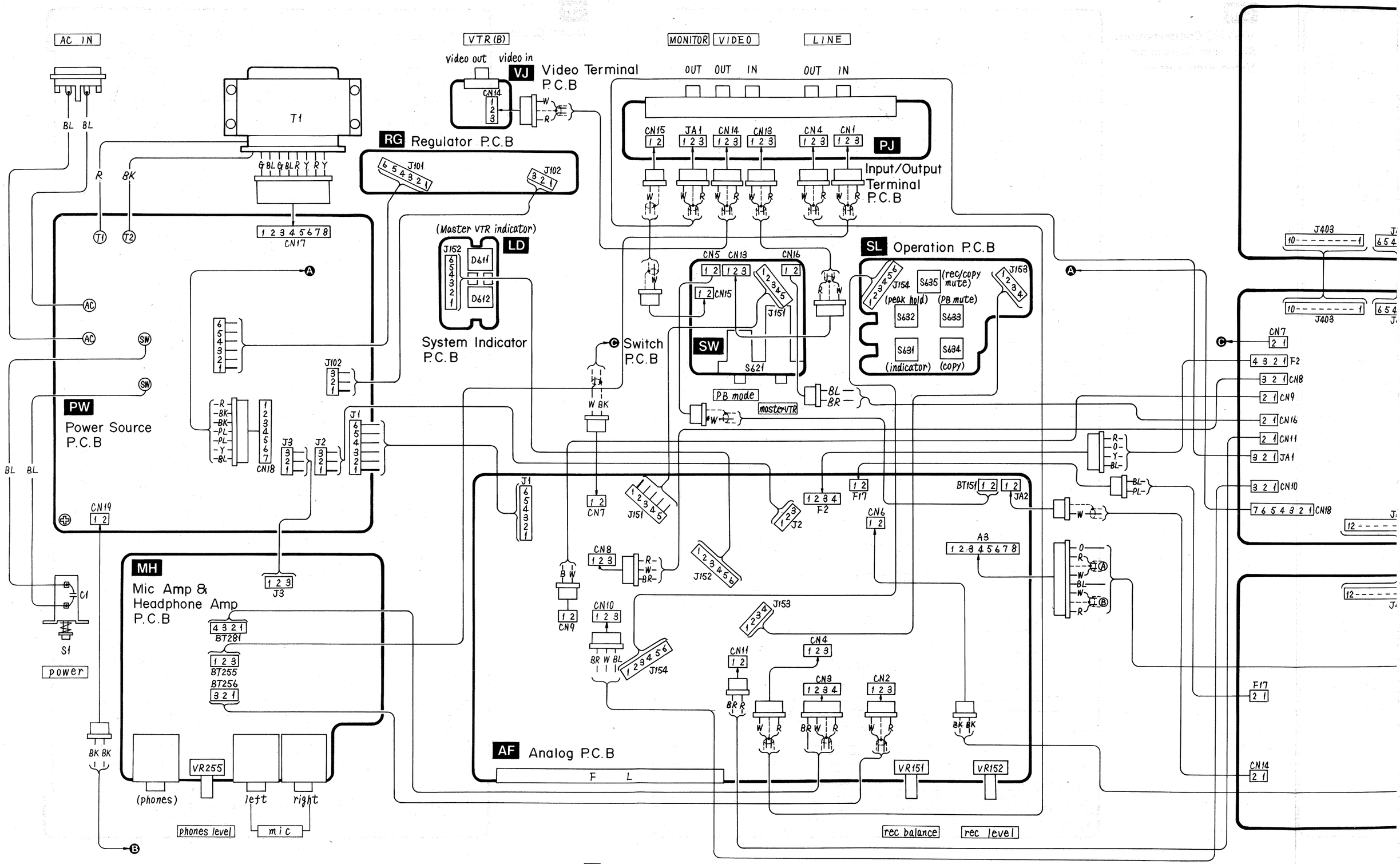
Q105 Regulator -5V

RST

Muting circuit

to FL GND

■ CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM



TR (B)
video in
VJ Video Terminal P.C.B
CN14 1 2 3
W R
P.C.B
J102 3 2 1
TR indicator)
LD
ndicator
MONITOR VIDEO LINE
OUT OUT IN OUT IN
CN15 1 2
JA1 1 2 3
CN14 1 2 3
CN13 1 2 3
CN4 1 2 3
CN1 1 2 3
PJ
Input/Output Terminal P.C.B
SL Operation P.C.B
CN5 1 2
CN13 1 2 3
CN16 1 2
1 2 CN15
J151 1 2 3 4 5
SW
S621
J154 1 2 3 4 5 6
S635 (rec/copy mute)
J153 1 2 3 4
(peak hold)
(PB mute)
S632
S633
S631 (indicator)
S634 (copy)
Switch P.C.B
PB mode
masterVTR
W BK
8L
8R
R-
O-
Y-
BL-
BL-
PL-
J1 6 5 4 3 2 1
1 2 CN7
J151 1 2 3 4 5
1 2 3 4 F2
F17 1 2
J2 1 2 3
CN6 1 2
BT151 1 2
1 2 JA2
A3 1 2 3 4 5 6 7 8
CN8 1 2 3
R-
W-
BR-
B W
1 2 CN9
J152 1 2 3 4 5 6
J153 1 2 3 4
CN10 1 2 3
BR W BL
J154 1 2 3 4 5 6
CN11 1 2
CN4 1 2 3
CN3 1 2 3 4
CN2 1 2 3
BR R
W R
BK BK
VR151
VR152
rec balance
rec level
AF Analog P.C.B
F L
21

12 - - - - - - - - - 1 J411
DI Digital P.C.B
J403 10 - - - - - - - 1
J406 6 5 4 3 2 1
J402 10 - - - - - - - 1
J412 5 4 3 2 1
J401 16 - - - - - - - - - - - - - - - 1
45 For PAL / SECAM format
CM V SYNC Compensation Slice Level Control & Video Amp P.C.B
CN7 2 1
4 3 2 1 F2
3 2 1 CN8
2 1 CN9
2 1 CN16
2 1 CN11
3 2 1 JA1
3 2 1 CN10
7 6 5 4 3 2 1 CN18
J405 12 - - - - - - - - - - - 1
J404 12 - - - - - - - - - - - 1
VC Video Circuit & DA/AD Converter P.C.B
F17 2 1
CN14 2 1
1 2 3 4 5 6 7 8 A3
CN6 1 2
CN19 1 2
22

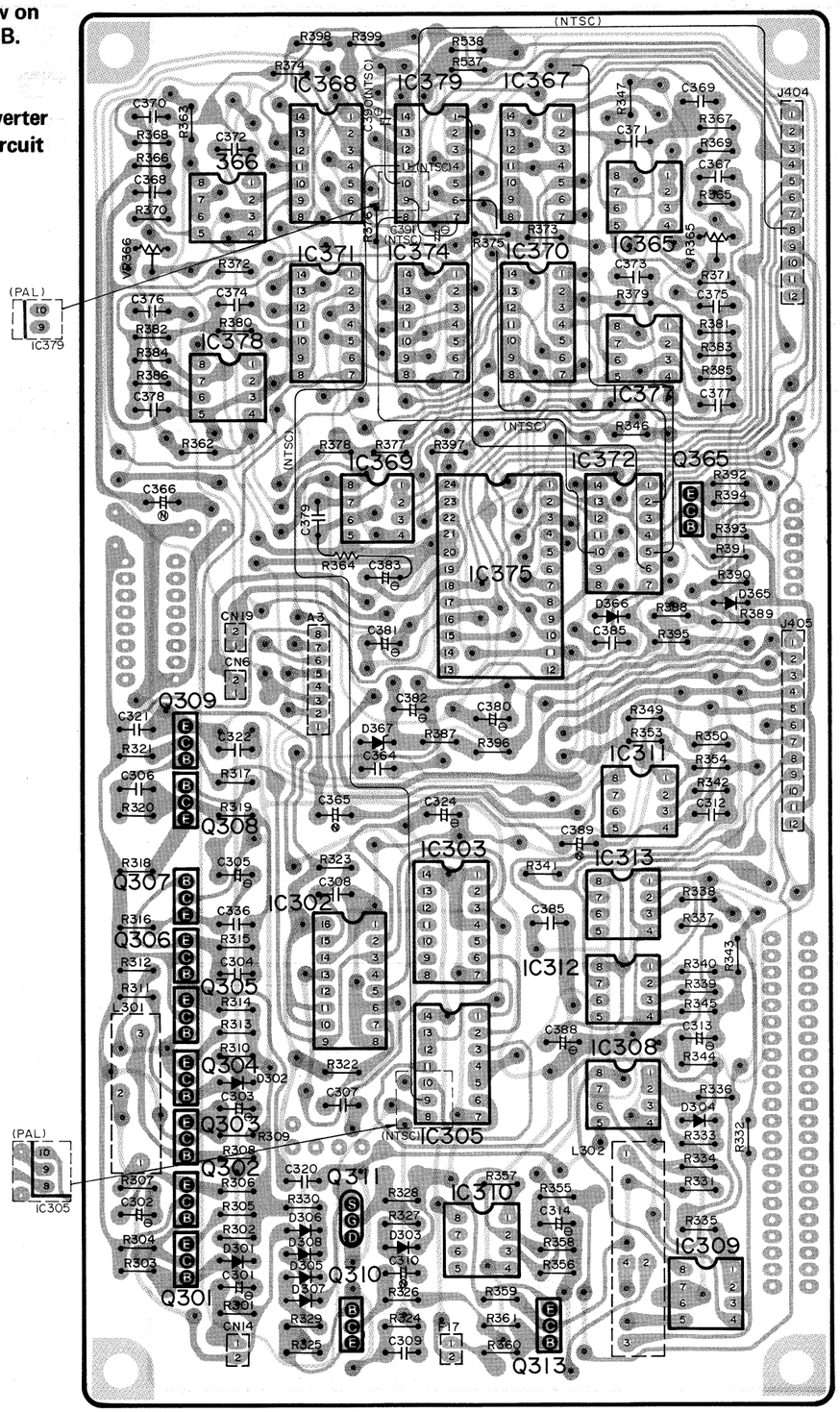
23

■ PRINTED CIRCUIT BOARDS

Circuit view on top of P.C.B.

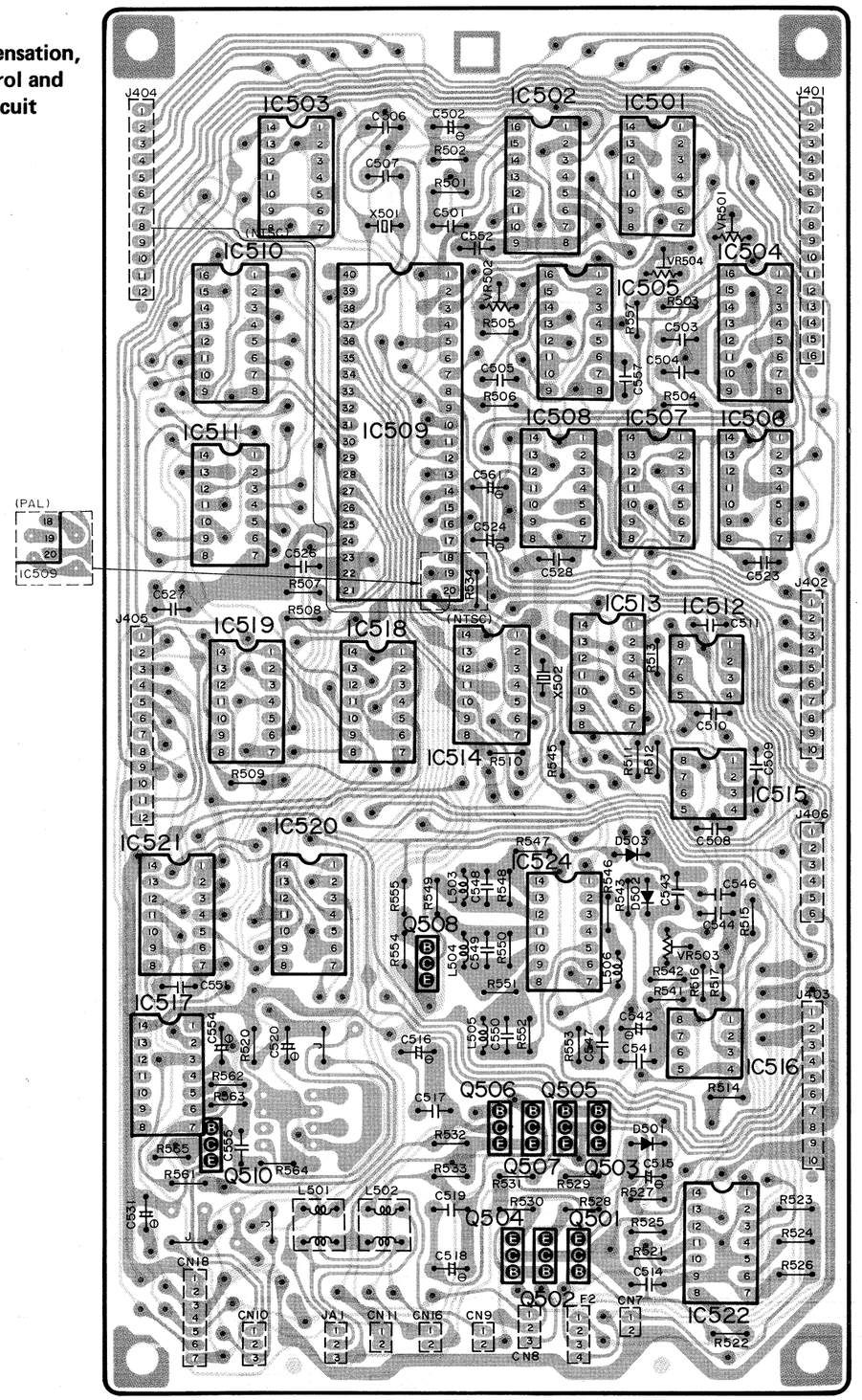
VC

DA/AD Converter and Video Circuit



CM

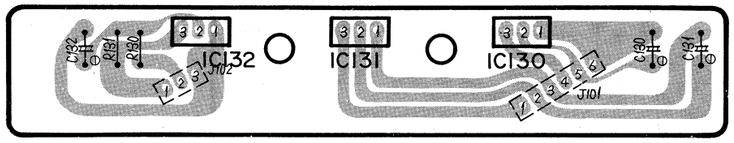
V SYNC Compensation, Slice level Control and Video Amp. Circuit



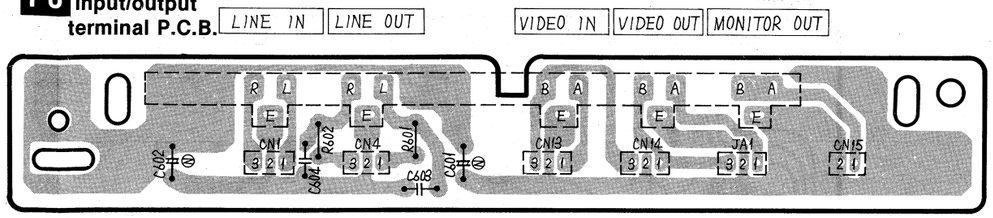
DI

Digital Circuit

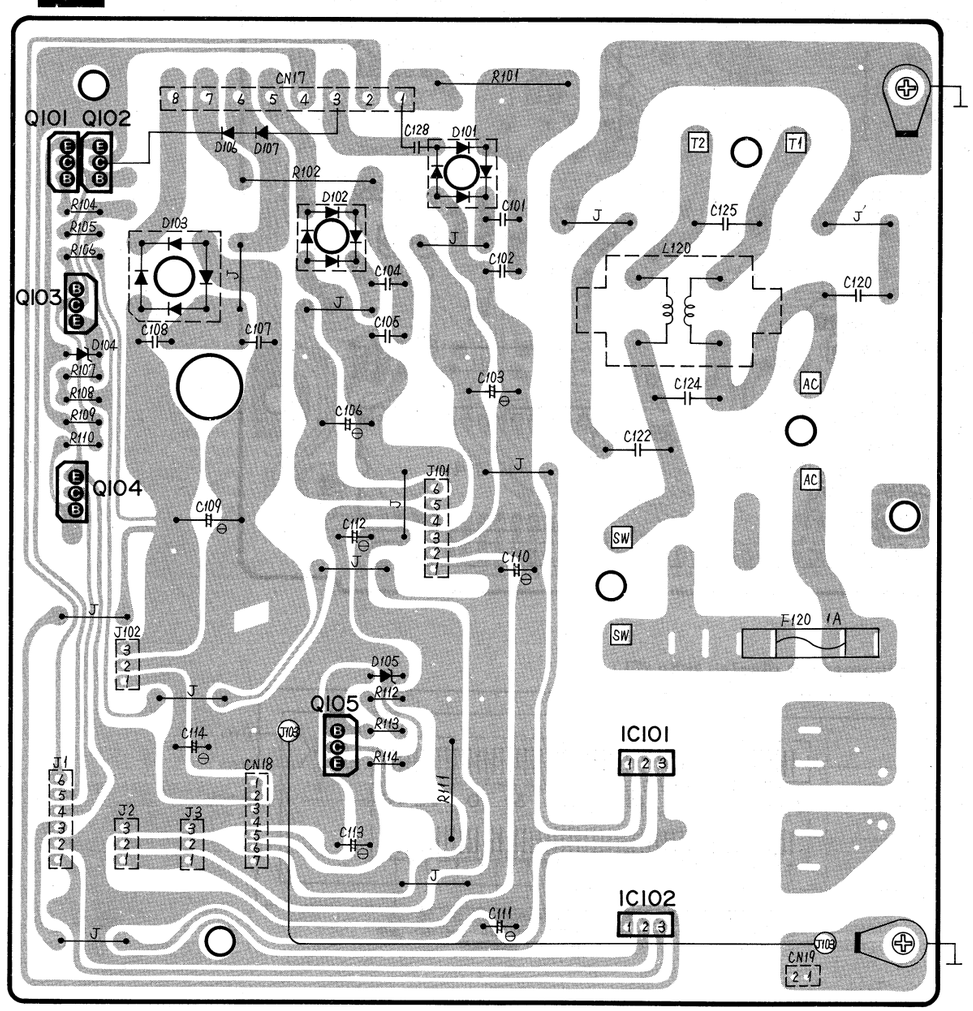
RG Regulator P.C.B.



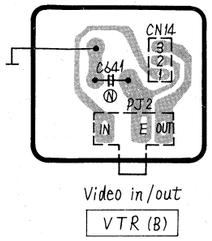
PJ Input/output terminal P.C.B.



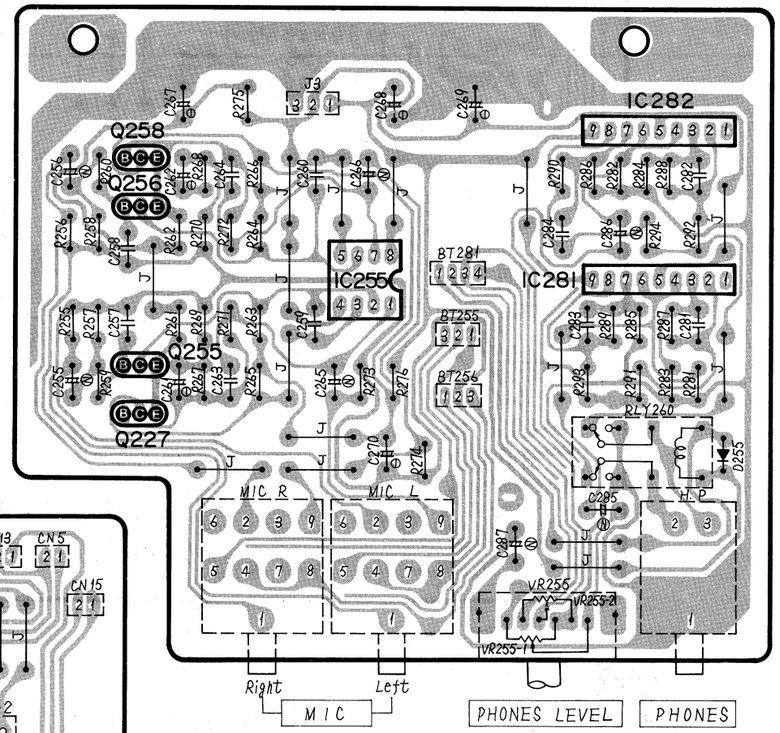
PW Power source P.C.B.



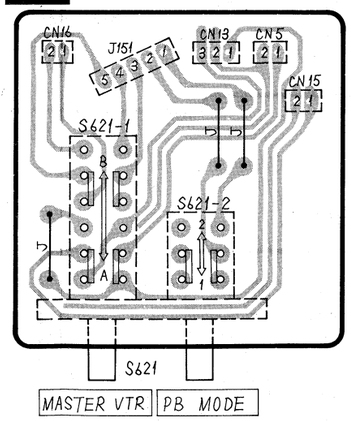
VJ Terminal P.C.B.



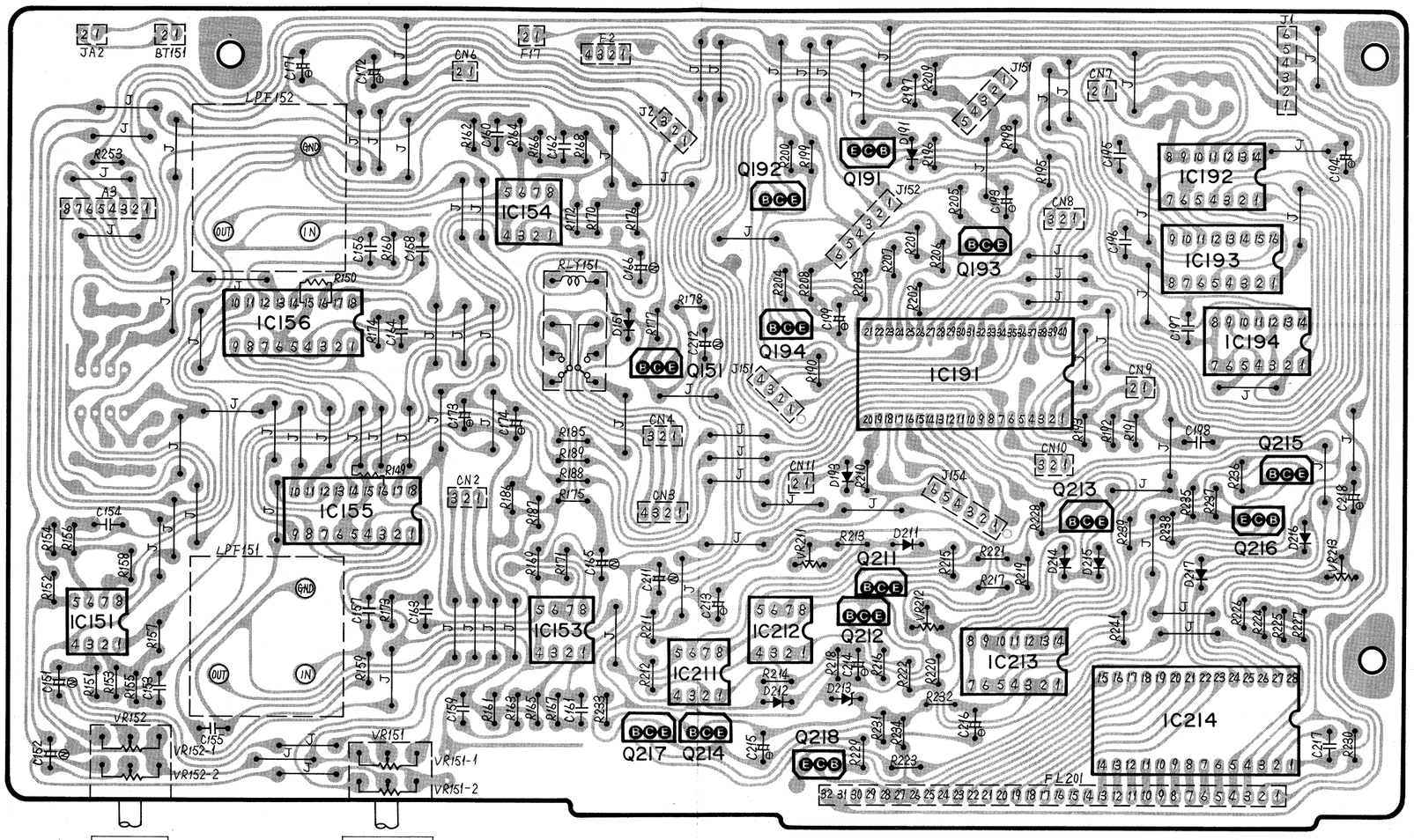
MH Mic amp. & headphone amp. P.C.B.



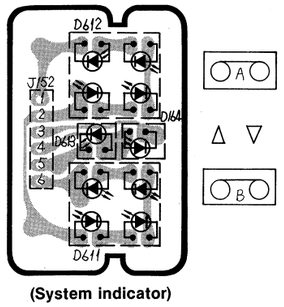
SW Switch P.C.B.



AF Analog & display P.C.B.

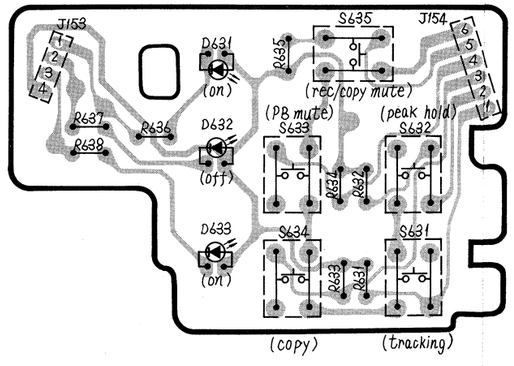


LD System indicator P.C.B.

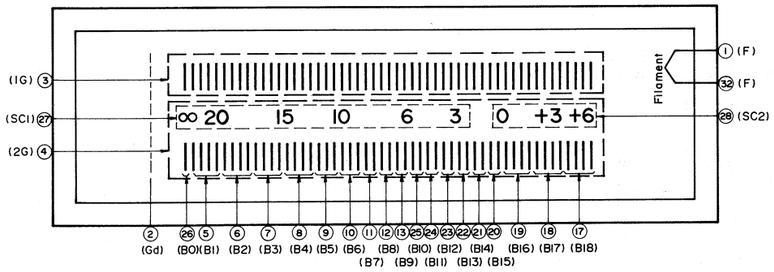


(System indicator)

SL Operation P.C.B.



• Fluorescent display tube (FL)



VC

Q301,304 2SC2377 INPUT AMP

Q302,303 2SD636 INPUT AMP

Q305,306 2SD636 INPUT AMP & C SYNC SEPARATOR

Q307,308 2SB641 C SYNC SEPARATOR

Q309 2SD636 CSYNC SEPARATOR

IC303 DN74LS74A D FLIP FLOP

IC305 DN74LS00 NAND GATE

IC302 DN74LS123 MULTIVIBRATOR

Q310 2SB641 FET DRIVER

Q311 2SK301 SWITCHING

D301,302 SVDISS133

D303 SVDISS133

D304 SVDISS133

D305~308 SVDISS133

D365,366 SVDISS133

L301 ELBSF7

LPF

IC308 SVITL082CP OPERATIONAL AMP

IC309 SVITL082CP OPERATIONAL AMP

IC312,313 SVITL810CP OPERATIONAL AMP

IC365,366 SVITL082CP OPERATIONAL AMP

IC308,309 SVITL082CP OPERATIONAL AMP

IC379 DN74LS04 INVERTER

IC367,368 SVIμPD4066BC QUAD BILATERAL SWITCH

IC370,371 SVIμPD4066BC QUAD BILATERAL SWITCH

IC311 AN6914 COMPARATOR

IC310 AN6652 COMPARATOR

IC312 L302 400nSEC

Q313 2SD636 SWITCHING

D367 MA4051 5.1V ZENER

IC372 DN74LS126A BUFFER

IC374 DN74LS74A D FLIP FLOP

IC375 EHKMA6196 D-A/A-D CONVERTER

IC377,378 SVITL082CP OPERATIONAL AMP.

IC369 SVITL082CP OPERATIONAL AMP

CN14 1 VIDEO IN 2 GND — To AF P.C.B JA2

A3 1 ADL 2 GND 3 ADR 4 DAL 5 GND 6 DAR 7 /EMPH 8 PB/REC — To AF P.C.B

F17 1 V.EO 2 +5V — To P.C.B

J405 1 PB/REC 2 +12V 3 -15V 4 GND 5 +5V 6 -5V 7 VIDEO V 8 /CSYNC 9 PB DATA 10 S.LEVEL 11 +5V 12 GND — To P.C.B

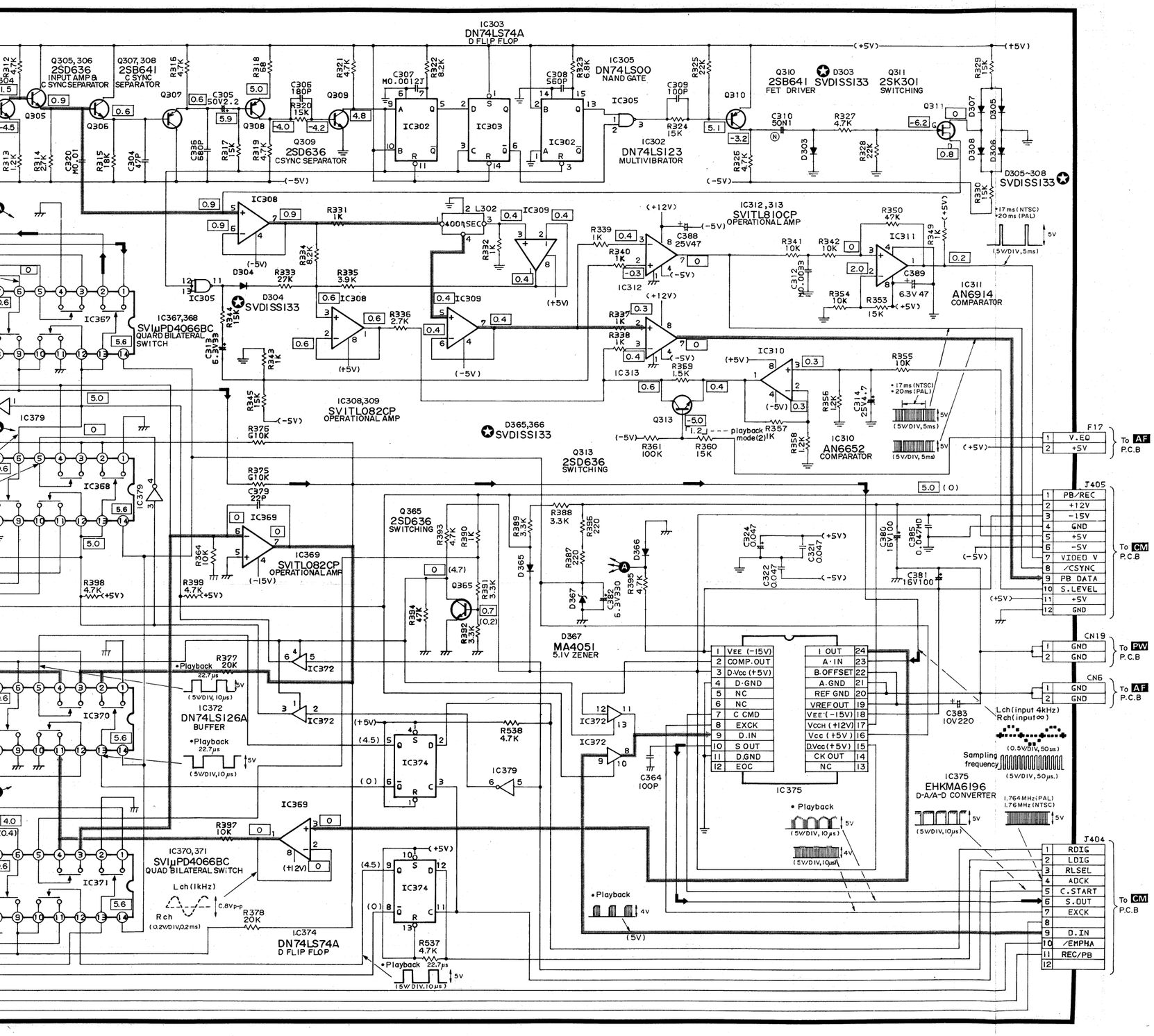
CN19 1 GND 2 GND — To P.C.B

CN6 1 GND 2 GND — To P.C.B

J404 1 RDIG 2 LDIG 3 RLSEL 4 ADCK 5 C.START 6 S.OUT 7 EXCK 8 9 D.IN 10 /EMPHA 11 REC/PB 12 — To P.C.B

1	VEE (-15V)
2	COMP.OUT
3	D-Vcc (+5V)
4	D-GND
5	NC
6	NC
7	C CMD
8	EXCK
9	D.IN
10	S OUT
11	D.GND
12	EOC

24	I OUT
23	A-IN
22	B-OFFSET
21	A.GND
20	REF GND
19	VREF OUT
18	VEE (-15V)
17	Vcch (+12V)
16	Vcc (+5V)
15	D.Vcc (+5V)
14	CK OUT
13	NC



■ SCHEMATIC DIAGRAM Ⓐ

DA/AD Converter and Video Circuit

Notes:

1. **S601** : Power switch in "**on**" position.
2. **S602–1** : Master VTR switch in "**A**" position.
   A ⟷ B
3. **S602–2** : Playback mode switch in "**1**" position.
   1 ⟷ 2
4. **S631** : Tracking switch.
5. **S632** : Peak hold switch.
6. **S633** : Copy switch.
7. **S634** : Playback muting switch
8. **S635** : Rec/Copy muting switch.
9. The voltage value and waveforms are reference voltage and waveform in playback mode which are measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of each line. Accordingly, the voltage value may include some error depending upon the internal impedance of DC electronic voltmeter (tester, etc.) and set measured.
   * ▭ : Voltage in playback mode.
   * ( ) : Voltage in recording mode.
10. Part No. with ✪ mark are not indentical between regulator part No. and repair part No. supplied.
    So, when placing an order for repair parts, use the part No. in the replacement part list of repair parts.
11. ——— : +B voltage lines. ▒▒▒ : Playback signal lines.
    ➡ : Recording signal lines.
12. Important safety notice:
    Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
13. This schematic diagram may be modified at anytime with the development of new technolgy.
14. Both NTSC and PAL/SECAM formats are mentioned in this schematic diagram.
    (NTSC) and (PAL) in the schematic diagram indicates the difference in format.
    Those with (NTSC) are connected only to NTSC format.
    Those with (PAL) are connected only to PAL/SECAM format.
    When the constant is different between NTSC and PAL/SECAM formats, refer to the table in the schematic diagram and the resistors & capacitors list.

IMPORTANT SAFETY NOTICE

The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards.
When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

• Product for MC only

FUSE REPLACEMENT

Symbol located near the fuse indicates fast operating type. For continued protection against fire hazard, replace with same type fuse. Refer to the symbol for fuse rating.

FUSIBLE REMPLACEMENT

Le symbole qui se trouve près du fusible singifie un fusible à action rapide. Pour une protection contiue contre les risques d'incendie, n'utiliser que des fusibles du même type. Se rapporter au symbole pour la valeur des fusibles.

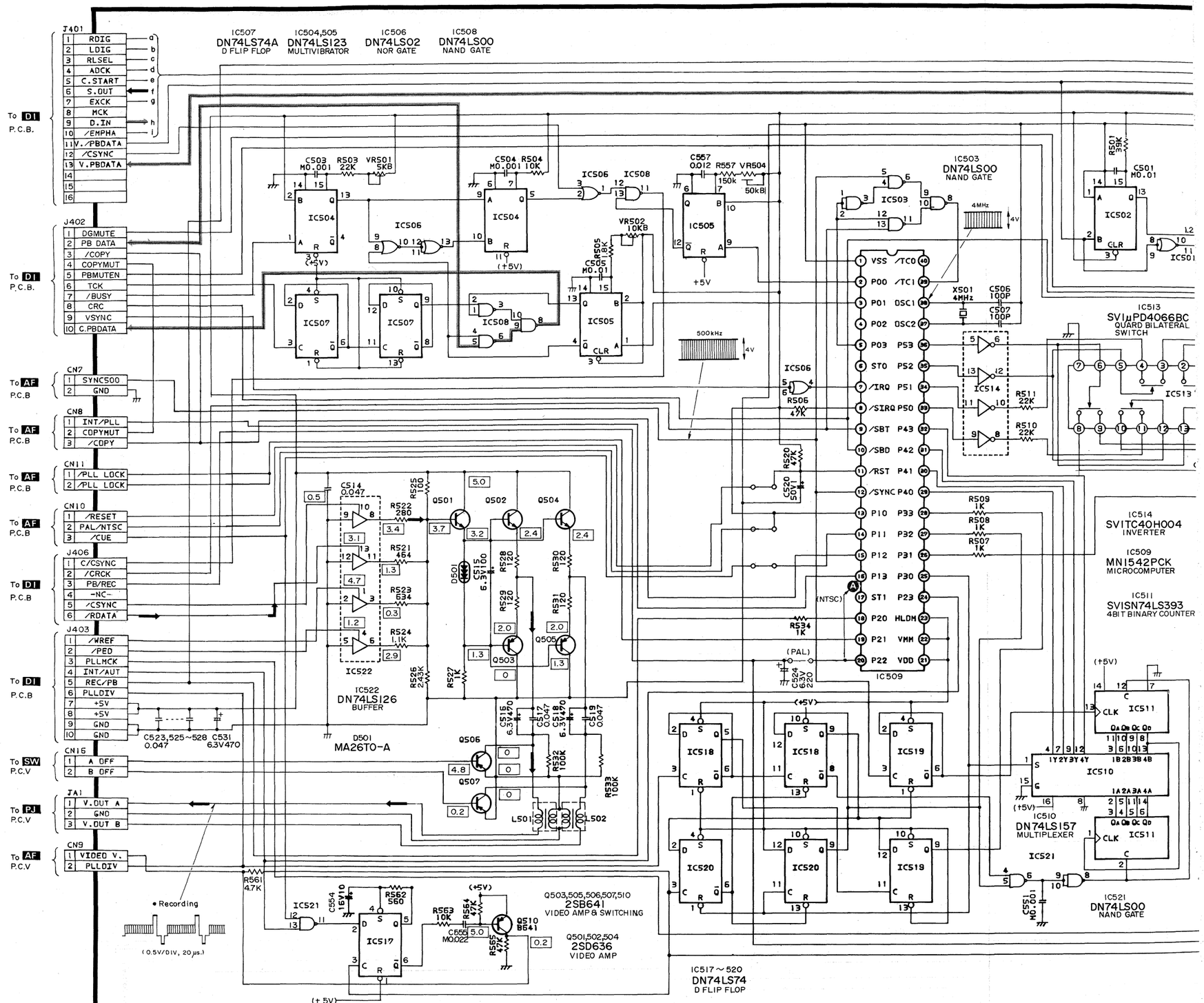
1 2 3 4 5 6 7 8 9 10

A B C D E F

■ SCHEMATIC DIAGRAM Ⓑ

V SYNC Compensation, Slice Level Control and Video Amp. Circuit

J401①pin	J402②pin
T---22.7μs 5V (5V/DIV, 10μs)	5V (5V/DIV, 20μs)
J401②pin	J402⑥pin
T---22.7μs 5V (5V/DIV, 10μs)	2.64MHz(NTSC) 2.625MHz(PAL) 4V
J401③pin	J402⑦pin
T---22.7μs 5V (5V/DIV, 10μs)	T---17ms(NTSC) 20ms(PAL) 5V (5V/DIV, 5ms)
J401④pin	J402⑧pin
1.76MHz(NTSC) 1.764MHz(PAL) 5V	4V (5V/DIV, 5ms)
J401⑤pin	J402⑨pin
5V (5V/DIV, 10μs)	T---17ms(NTSC) 20ms(PAL) 5V (5V/DIV, 5ms)
J401⑥pin	J402⑩pin
5V (5V/DIV, 10μs)	5V
J401⑦pin	J406①pin
4V (5V/DIV, 10μs)	T---17ms(NTSC) 20ms(PAL) 5V (5V/DIV, 5ms)
J401⑧pin	J406②pin
15.86MHz(NTSC) 15.75MHz(PAL) 4V	T---17ms(NTSC) 20ms(PAL) 5V (5V/DIV, 5ms)
J401⑨pin	J406⑤pin
4V (5V/DIV, 10μs)	T---17ms(NTSC) 20ms(PAL) 5V (5V/DIV, 5ms)
J401⑪⑫pin	J406⑥pin
T---17ms(NTSC) 20ms(PAL) 4V (5V/DIV, 5ms)	T---17ms(NTSC) 20ms(PAL) 5V (5V/DIV, 5ms)
J401⑬pin	J406⑥pin
T---17ms(NTSC) 20ms(PAL) 4V (5V/DIV, 5ms)	15.86MHz(NTSC) 15.75MHz(PAL) 4V
J403①pin	J403⑥pin
T---63μs. 5V (5V/DIV, 20μs)	T---17ms(NTSC) 20ms(PAL) 5V (5V/DIV, 5ms)
J403②pin	
T---63μs 5V (5V/DIV, 20μs)	



5 6 7 8 9 10 11 12 13 14

CM

IC507 DN74LS74A D FLIP FLOP
IC504,505 DN74LSI23 MULTIVIBRATOR
IC506 DN74LS02 NOR GATE
IC508 DN74LS00 NAND GATE

RDIG LDIG RLSEL ADCK C.START S.OUT EXCK MCK D.IN /EMPHA /PBDATA /CSYNC /PBDATA
DGMUTE PB DATA /COPY COPYMUT PBMUTEN TCK /BUSY CRC VSYNC PBDATA
SYNC500 GND
INT/PLL COPYMUT /COPY
PLL LOCK PLL LOCK
/RESET AL/NTSC /CUE
/CSYNC /CRCK PB/REC -NC- /CSYNC /RDATA
/WREF /PED PLLMCK INT/AUT REC/PB PLLDIV +5V +5V GND GND
A OFF B OFF
OUT A GND OUT B
IDED V. PLLDIV

C503 M0.001 R503 22K VR501 5KB
C504 M0.001 R504 10K
C557 0.012 R557 VR504 150k 50kB
C505 M0.01 R505 1.8K
VR502 10KB
IC504 IC505 IC506 IC507 IC508

IC503 DN74LS00 NAND GATE
4MHz 4V
500kHz 4V
X501 4MHz C506 100P C507 100P
IC509 MN1542PCK MICROCOMPUTER
(NTSC) (PAL)
R534 1K R509 1K R508 1K R507 1K
C524 0.01 220

IC502 DN74LSI23 MULTIVIBRATOR
R501 39K C501 M0.01 R502 39K C502 25V3.3 C552 M0.0027
IC501 DN74LS02 NOR GATE
(NTSC)

IC513 SVIμPD4066BC QUARD BILATERAL SWITCH
IC514 SVITC40H004 INVERTER
R511 22K R510 22K
R513 10K R512 10K
IC515 IC516 IC512 IC517
C509 M0.1 C511 M0.1 C508 M0.1
R515 22K IC512,515 SVITL082CP BUFFER
R541 2.2K R514 12K R516 1K VR503 50kB R517 5.6K
IC516 SVINJM4559DS DC AMP.
+12V -15V

IC511 SVISN74LS393 4BIT BINARY COUNTER
IC510 DN74LS157 MULTIPLEXER
IC521 DN74LS00 NAND GATE
IC524 DN74LS04 INVERTER
R554 47K R555 4.7K Q508 2SB641 D503 SVDISS133
X502 4MHz R545 1M R542 12K C543 104 C542 16V10 C546 68P D502 SVDKV1236Z R543 1K C544 104 R546 47
C541 M0.01
C550 7P C549 7P C548 7P C547 7P
L505 10μ L504 10μ L503 10μ L506 L504
R552 56K R550 56K R548 56K R547 3.3K
R551 3.3K R549 3.3K
R553 10K C551 M0.01
4MHz 5V

IC522 DN74LSI26 BUFFER
D501 MA26T0-A
Q501 Q502 Q504 Q503 Q505 Q506 Q507
R522 280 R521 464 R523 634 R524 1.1K R525 100 R526 2.43K R527 1K R528 120 R529 120 R530 120 R531 120 R532 100K R533 100K
D501 6.5V150
C514 0.047 C515 6.3V470 C516 6.3V470 C517 0.047 C518 6.3V470 C519 0.047
C523,525~528 0.047 C531 6.3V470
L501 L502
R561 4.7K
• Recording (0.5V/DIV, 20μs.)

IC517 R562 560 C554 16V10 R563 10K R564 47K C555 M0.022 Q510 8641
(+5V)
Q503,505,506,507,510 2SB641 VIDEO AMP & SWITCHING
Q501,502,504 2SD636 VIDEO AMP
IC517~520 DN74LS74 D FLIP FLOP

IC518 IC519 IC520
R520 47K C520 M0.01 R506 47K

J404
1 LDIG
2 RDIG
3 RLSEL
4 ADCK
5 C.START
6 S.OUT
7 EXCK
8 MCK
9 D.IN
10 /EMPHA
11 REC/PB
12
To VC P.C.B.

CN18
1 +5V
2 +5V
3 GND
4 GND
5 -5V
6 +12V
7 -15V
To PW P.C.B.

J405
1 PB/REC
2 +12V
3 -15V
4 GND
5 +5V
6 -5V
7 VIDEO V.
8 V./CSYNC
9 V.PBDATA
10 S.LEVEL
11 +5V
12 GND
To VC P.C.B

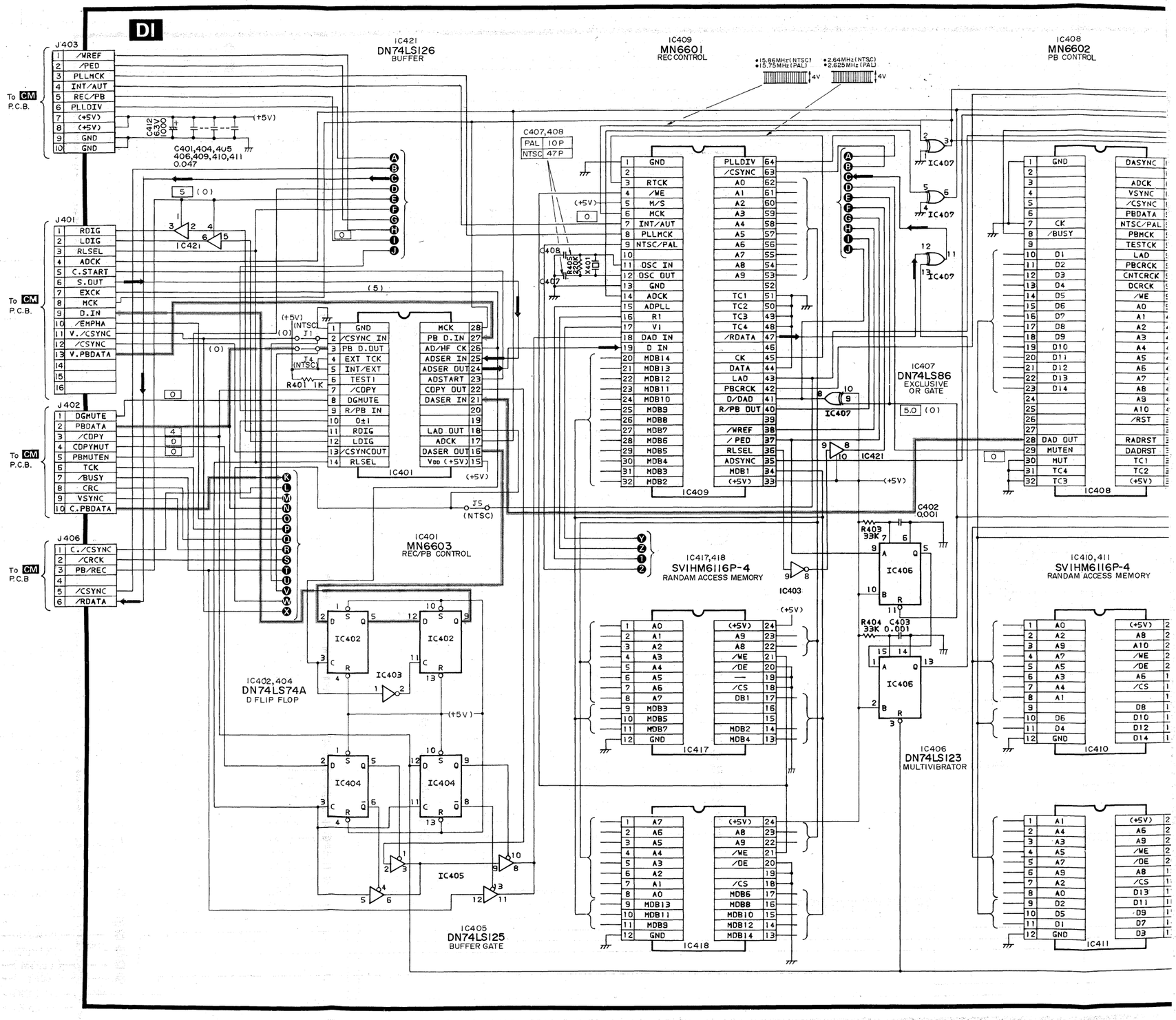
F2
1 CRC
2 -NC-
3 RECMUT
4 PBMUTEN
To AF P.C.B.

J405 ⑦pin
T--- 17ms (NTSC) 20ms (PAL)
(5V/DIV, 5ms.) 5V
J405 ⑧pin
(5V/DIV, 10μs) 5V
J405 ⑨pin
T--- 17ms (NTSC) 20ms (PAL)
(5V/DIV, 5ms.) 4V

■ SCHEMATIC DIAGRAM ©

Digital Circuit

J401①pin	J402②pin
T---22.7μs, 5V (5V/DIV, 10μs)	T---22.7μs, 5V (5V/DIV, 20μs)
J401②pin	**J402⑥pin**
T---22.7μs, 5V (5V/DIV, 10μs)	2.64MHz(NTSC) 2.625MHz(PAL), 4V
J401③pin	**J402⑦pin**
T---22.7μs, 5V (5V/DIV, 10μs)	T---17ms(NTSC) 20ms(PAL), 5V (5V/DIV, 5ms)
J401④pin	**J402⑧pin**
1.76MHz(NTSC) 1.764MHz(PAL), 5V	4V (5V/DIV, 5ms)
J401⑤pin	**J402⑨pin**
5V (5V/DIV, 10μs)	T---17ms(NTSC) 20ms(PAL), 5V (5V/DIV, 5ms)
J401⑥pin	**J402⑩pin**
5V (5V/DIV, 10μs)	5V
J401⑦pin	**J406①pin**
4V (5V/DIV, 10μs)	T---17ms(NTSC) 20ms(PAL), 5V (5V/DIV, 5ms)
J401⑧pin	**J406②pin**
15.86MHz(NTSC) 15.75MHz(PAL), 4V	T---17ms(NTSC) 20ms(PAL), 5V (5V/DIV, 5ms)
J401⑨pin	**J406⑤pin**
4V (5V/DIV, 10μs)	T---17ms(NTSC) 20ms(PAL), 5V (5V/DIV, 5ms)
J401⑪⑫pin	**J406⑥pin**
T---17ms(NTSC) 20ms(PAL), 4V (5V/DIV, 5ms)	T---17ms(NTSC) 20ms(PAL), 5V (5V/DIV, 5ms)
J401⑬pin	**J406⑥pin**
T---17ms(NTSC) 20ms(PAL), 4V (5V/DIV, 5ms)	15.86MHz(NTSC) 15.75MHz(PAL), 4V
J403①pin	**J403⑥pin**
T---63μs. 5V (5V/DIV, 20μs)	T---17ms(NTSC) 20ms(PAL), 5V (5V/DIV, 5ms)
J403②pin	
T---63μs 5V (5V/DIV, 20μs)	



IC408
MN6602
PB CONTROL

•2.64MHz(NTSC)
•2.625MHz(PAL)
4V 4V

IC407
DN74LS86
EXCLUSIVE OR GATE

IC406
DN74LS123
MULTIVIBRATOR

IC410,411
SVIHM6116P-4
RANDAM ACCESS MEMORY

IC420
DN74LS123
MULTIVIBRATOR

IC412,415
DN74LS161A
4-BIT BINARY COUNTER

IC403
DN74LS04
INVERTER

IC414
DN74LS02
NOR GATE

IC413,416
DN74LS74A
D FLIP FLOP

1	GND	DASYNC	64
2			63
3		ADCK	62
4		VSYNC	61
5		/CSYNC	60
6		PBDATA	59
7	CK	NTSC/PAL	58
8	/BUSY	PBMCK	57
9		TESTCK	56
10	D1	LAD	55
11	D2	PBCRCK	54
12	D3	CNTCRCK	53
13	D4	DCRCK	52
14	D5	/WE	51
15	D6	A0	50
16	D7	A1	49
17	D8	A2	48
18	D9	A3	47
19	D10	A4	46
20	D11	A5	45
21	D12	A6	44
22	D13	A7	43
23	D14	A8	42
24		A9	41
25		A10	40
26		/RST	39
27			38
28	DAD OUT	RADRST	37
29	MUTEN	DADRST	36
30	MUT	TC1	35
31	TC4	TC2	34
32	TC3	(+5V)	33

IC408

1	A0	(+5V)	24
2	A2	A8	23
3	A9	A10	22
4	A7	/WE	21
5	A5	/OE	20
6	A3	A6	19
7	A4	/CS	18
8	A1		17
9		D8	16
10	D6	D10	15
11	D4	D12	14
12	GND	D14	13

IC410

1	A1	(+5V)	24
2	A4	A6	23
3	A3	A9	22
4	A5	/WE	21
5	A7	/OE	20
6	A9	A8	19
7	A2	/CS	18
8	A0	D13	17
9	D2	D11	16
10	D5	D9	15
11	D1	D7	14
12	GND	D3	13

IC411

J411

1	(+5V)
2	GND
3	CSYNC
4	CSYNC IN
5	PBDATA
6	PB OUT
7	0±1
8	LAD OUT
9	LAD
10	TCK
11	
12	NTSC/PAL

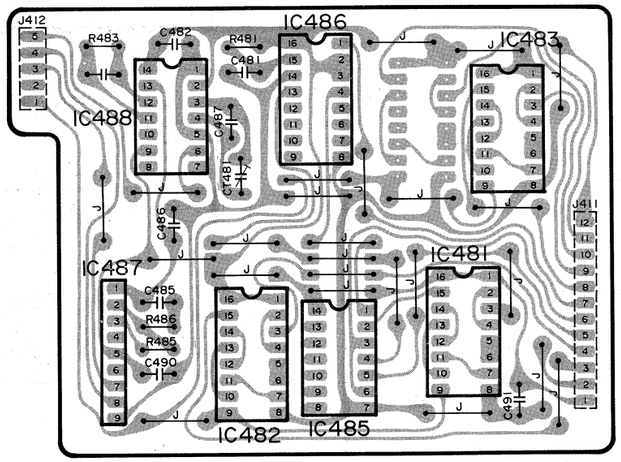
To 45 P.C.B (For PAL/SECAM format only)

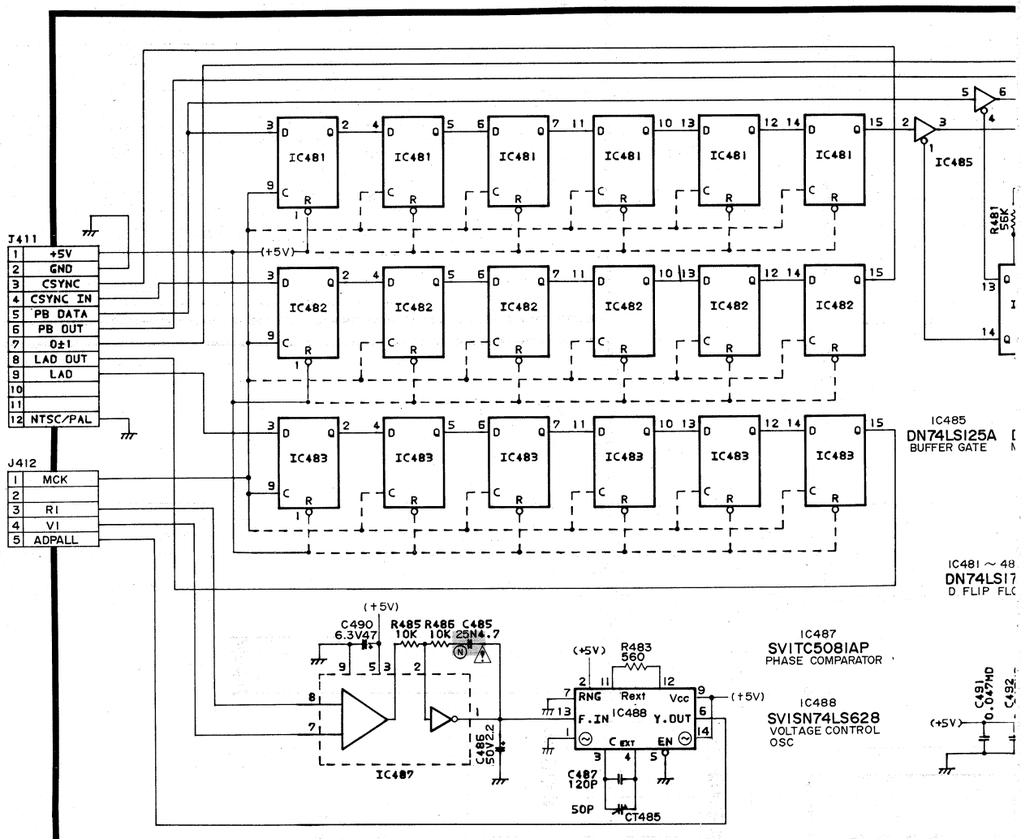
J412

1	MCK
2	
3	R1
4	V1
5	ADPLL

To 45 P.C.B (For PAL/SECAM format only)

45 For PAL/SECAM format only

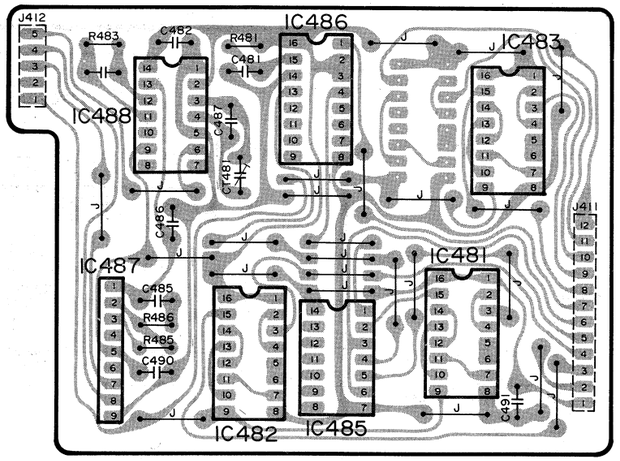


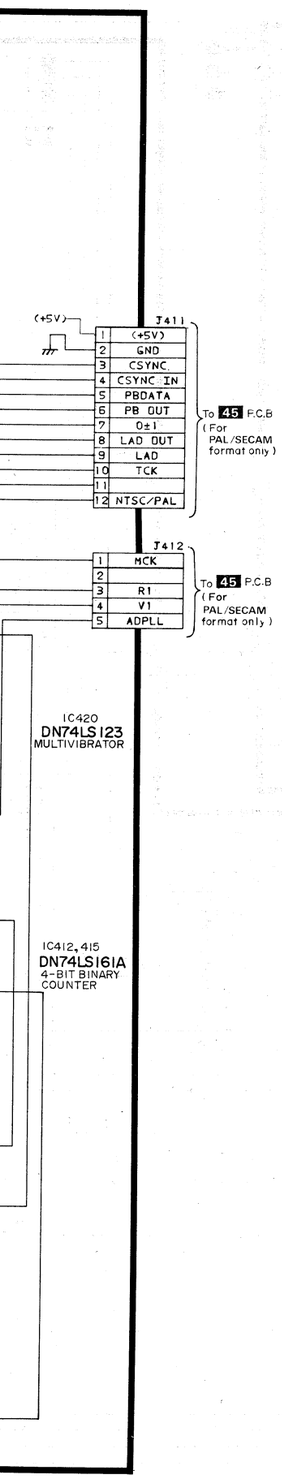


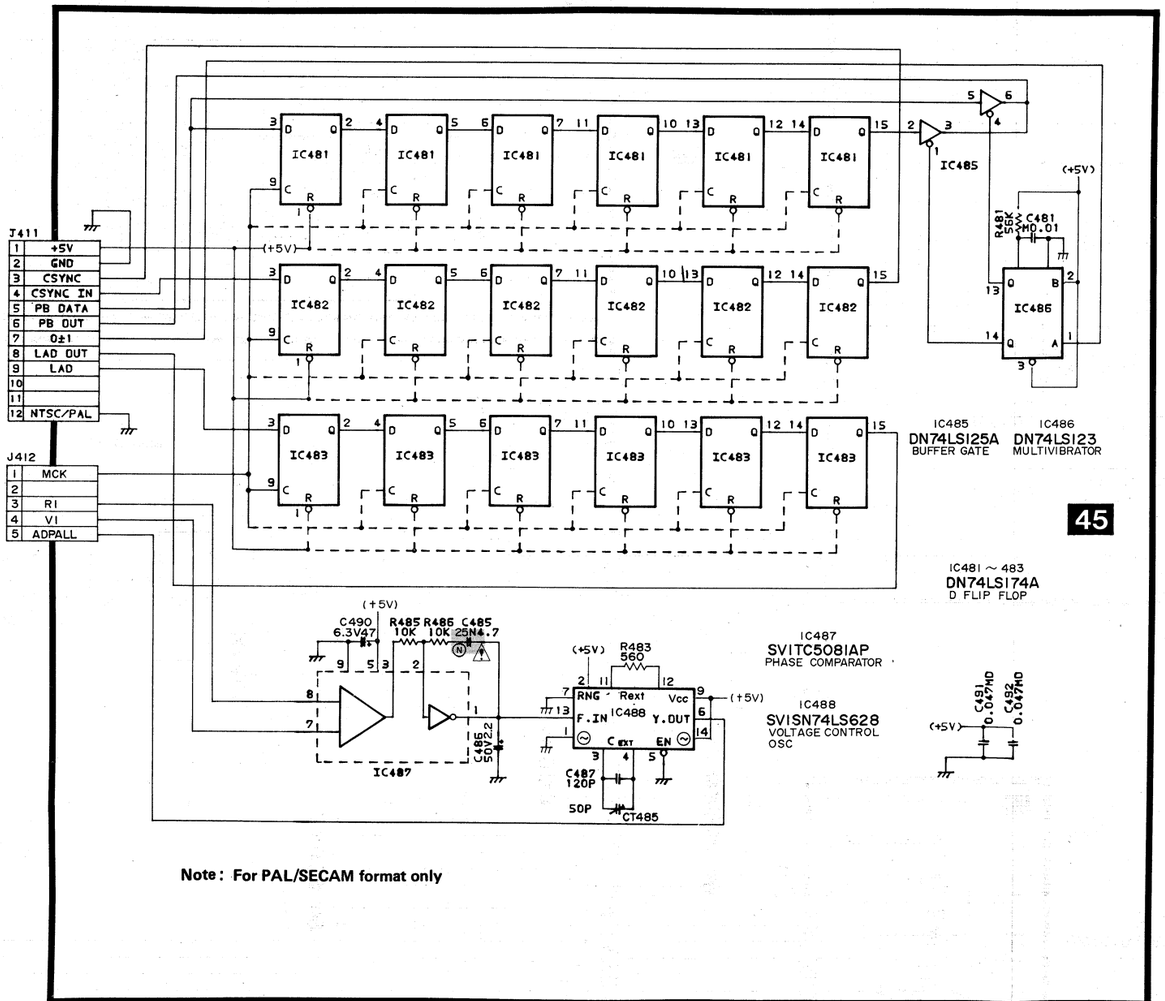
Note : For PAL/SECAM format only

13 14 15 16 17 18 19

45 For PAL/SECAM format only

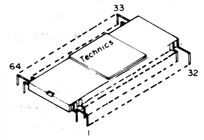
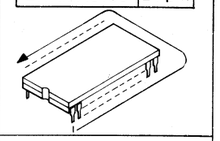
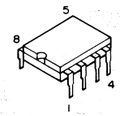
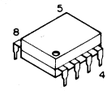
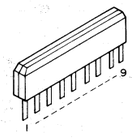
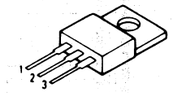
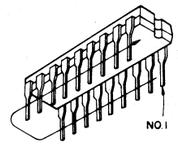
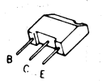
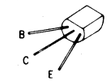
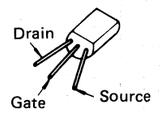
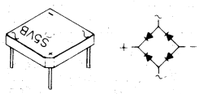
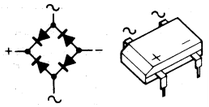
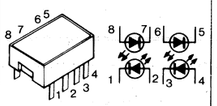
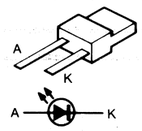
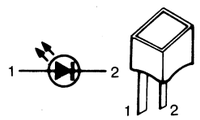
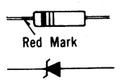
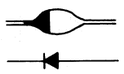
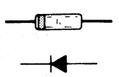






Note : For PAL/SECAM format only

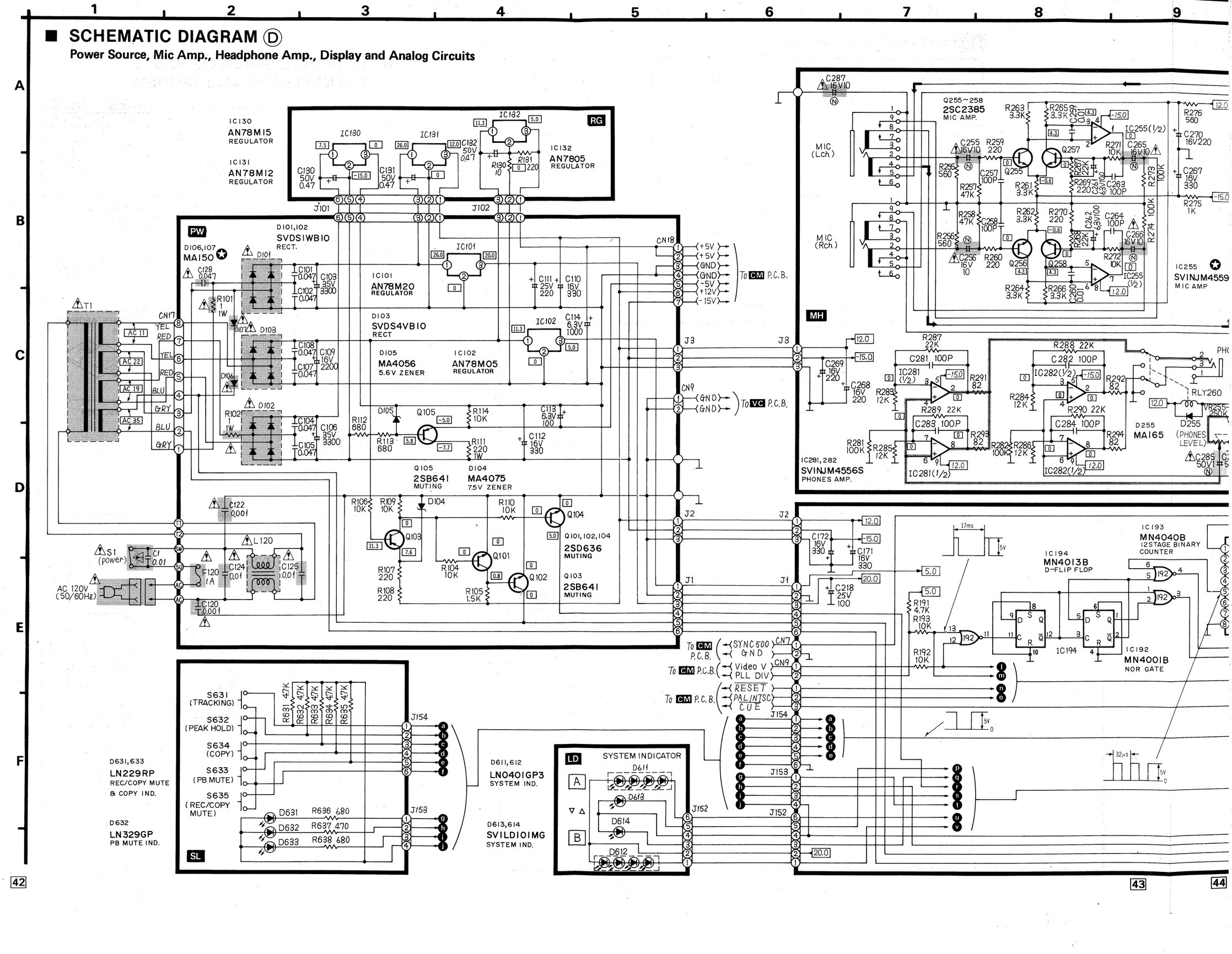
■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

DN74LS00 DN74LS02 DN74LS04 DN74LS74 DN74SL86 DN74LS126 MN4001B MN4013B SVITC40H004 SVIUPD4066BC	14 pin	MN6601, MN6602 	MN6603 28 pin EHKMA6196 24 pin 
DN74SL123 DN74LS161 MN4040B	16 pin	AN6552, AN6914 	SVINJM4559DS SVITL082P SVITL810CP 
MN6631	18 pin		
SVIHM6116P-4	24 pin	SVINJM4556S 	AN78M05, AN78M12 AM78M15, AN78M20 AN7805 
AN6870N	28 pin		
MN1420PCF MN1542PCK	40 pin		2SD641, 2SD636 
			2SC2385 
2SK301 		SVDS4VB10 	SVDS1WB10 
LN0401GP3 		LN229RP (Red) LN329GP (Green) 	SVDLD-101MG 
MN4056, MA4068 MA4075, MA4051 		NA26T0-A 	MA162A MA165, MA150 

SV-110 SV

■ SCHEMATIC DIAGRAM Ⓓ

Power Source, Mic Amp., Headphone Amp., Display and Analog Circuits



7 8 9 10 11 12 13 14 15 16

MIC (Lch)

MIC (Rch)

Q255~258
2SC2385
MIC AMP.

IC255
SVINJM4559DS
MIC AMP

MH

IC281,282
SVINJM4556S
PHONES AMP.

PHONES

RLY260

D255
MA165

(PHONES LEVEL)

BT255 BT256 BT281 CN2 CN3

AF

IC151
SVINJM4559DS
BUFFER

(REC LEVEL) (REC BALANCE)

IC155,156
MN6631
REC/PB SELECTOR

LPF151 LPF152
L.P.F

IC153,154
SVINJM45
BUFFER

Balance Adj.

D211,212
MA165

Recovery Adj.

D214,215
MA2670-A

IC211,212
AN6552
RECT AMP.

Q211~213
2SD636
BUFFER & SWITCHING

Q214
2SD636
CRC DET.

Q151
2SD636
RELAY DRIVE

D213
MA4068
6.8V ZENER

Q192~194
2SD636
LED DRIVE

D191
MA165

Q191
2SB641
SWITCHING

IC193
MN4040B
12STAGE BINARY COUNTER

IC194
MN4013B
D-FLIP FLOP

IC192
MN4001B
NOR GATE

D193
MA165

IC191
MN1420PCF
MICRO-COMPUTER

IC214
AN687
DISPLAY

13 14 15 16 17 18 19 20 21 22

IC155 IC156

C157 0.1 LPF151 IC153(1/2) -15.0 R171 16K IC153(1/2) 12.0 C165 16V 10 R235 10K R237 100K R238 4.7K Q216 12.0 D151 RLY151 R236 4.7K Q215 R239 100K

R159 2.7K L.P.F R163 2.4K R167 39K R169 18K R175 33K C155 330P C161 47P C159 .00012 R161 2.7K R165 2.4K

C156 330P C160 .00012 R162 2.7K R164 2.7K C162 47P R166 2.4K R168 39K R170 18K R176 33K C166 16V10 R172 16K

IC154(1/2) -15.0 C153,154 SVINJM4559DS BUFFER IC154(1/2) 12.0

Q215,217 2SD636 SWITCHING Q216,218 2SB641 SWITCHING

R223 47K R229 47K Q218 Q217 20.0 19.0 19.2 19.8

Balance Adj.

D151 MA165

R219 43K R220 43K R221 6.8K IC212(1/2) -12.0

C211 50V 2.2 R211 51K IC211(2/2) R213 33K VR211 20K D211 R215 4.7K R217 100K Q211

D214,215 MA2670-A D215 IC213

Recovery Adj. VR212 1M C213 25V 10

C212 50V 2.2 R212 51K IC211(1/2) R214 D212 R216 4.7K Q212 R228 4.7K Q213 D214

R241 100K R232 12K C216 16V 47 C214 25V 10 R218 470K IC212(1/2) -15.0 R222 6.8K

IC213 SVIμPD4066BC LEVEL/TRACKING SELECTOR

OdB Adj. FL201

VR213 10K D216 D217

R227 22K R226 22K R225 47K R224 47K C217 0.047 IC214

D216,217 MA165

IC214 AN6870N DISPLAY DRIVE

R230 4.7K

LEVEL INDICATOR & TRACKING INDICATOR

Q191 2SB641 SWITCHING D191 R196 4.7K R197 3.3K R198 470 Q151 R177 1K R178 4.7K R233 4.7K Q214 D213 R231 470K C215 50V1 R234 470K R232 12K C216 16V 47

Q151 2SD636 RELAY DRIVE

D213 MA4068 6.8V ZENER

IC211,212 AN6552 RECT AMP.

Q211~213 2SD636 BUFFER & SWITCHING

Q214 2SD636 CRC DET. R199 4.7K R190 270 R200 1K Q192

D191 MA165

Q192~194 2SD636 LED DRIVE

R195 10K C193 6.3V 47 Q193 R202 1K R205 1K R208 1K R201 4.7K R203 4.7K Q194 R204 1K C199 10V 22

C194 6.3V 470 C195 0.01 C196 0.01 C197 0.01 C198 0.01

2ms 3.5V 3.8ms 28Vp-p 64μs 32μs 5V

C158 0.1 R150 470K C163 .0039 R173 3.6K C164 .0039 R174 3.6K R149 470K

Note: ⌐¬ ..... Tracking switch "on"

CN4 A3 D/AR GND D/AL REC/PB A/DL GND A/DR EMPH To VC P.C.B.

R253 10K R209 4.7K

VJ C641 16V 10 VIDEO OUT VIDEO IN CN4 CN14 CN1 LINE IN CN4 R601 220 R602 220 C603 0.003 C604 0.003 LINE OUT C601 16V10 C602 16V10 VIDEO OUT VIDEO IN MONITOR JA1 (VIDEO OUT A) (GND) (VIDEO OUT B) To CM P.C.B.

CN6 GND GND To VC P.C.B.

PJ CN13 CN15

SW F17 VEQ +5V To VC P.C.B. J151 S621-1 S621-2 B MASTAR VTR A 2 PLAYBACK MODE 1 BT151 JA2 GND VIDEO IN To VC P.C.B. terminal CN14 CN5 CN16 (B OFF) (A OFF) To CM P.C.B.

F2 CRC MUT (PB MUTEN) To CM P.C.B.

CN8 INT/AUTO COPYM COPY To CM P.C.B.

CN11 PLL LOCK PLL LOCK To CM P.C.B.

Printed in Japan
840205000 Ⓗ TK